

SEQUENCE LISTING

<110> Watson, James D.
Tan, Paul L. J.

<120> Methods and Compounds for the Treatment
of Immunologically-Mediated Diseases of the Respiratory
System using Mycobacterium Vaccae

<130> 11000.1008c2

<150> US09/156,181

<151> 1998-09-17

<150> US 08/996,624

<151> 1997-12-23

<160> 208

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 25

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (7)...(7)

<400> 1

Ala	Pro	Val	Gly	Pro	Gly	Xaa	Ala	Ala	Tyr	Val	Gln	Gln	Val	Pro	Asp
1				5					10					15	
Gly	Pro	Gly	Ser	Val	Gln	Gly	Met	Ala							
			20				25								

<210> 2

<211> 10

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (2)...(2)

<400> 2

Met	Xaa	Asp	Gln	Leu	Lys	Val	Asn	Asp	Asp
1				5				10	

<210> 3

<211> 11

<212> PRT

<213> Mycobacterium vaccae

<220>

10051543-011802

<221> UNSURE
<222> (2)...(2)

<400> 3

Met Xaa Pro Val Pro Val Ala Thr Ala Ala Tyr
1 5 10

<210> 4
<211> 21
<212> PRT
<213> Mycobacterium vaccae

<400> 4

Thr Pro Ala Pro Ala Pro Pro Tyr Val Asp His Val Glu Gln Ala
1 5 10 15
Lys Phe Gly Asp Leu
20

<210> 5
<211> 29
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (25)...(25)

<400> 5

Met Gln Ala Phe Asn Ala Asp Ala Tyr Ala Phe Ala Lys Arg Glu Lys
1 5 10 15
Val Ser Leu Ala Pro Gly Val Pro Xaa Val Phe Glu Thr
20 25

<210> 6
<211> 21
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (6)...(6)

<400> 6

Met Ala Asp Pro Asn Xaa Ala Ile Leu Gln Val Ser Lys Thr Thr Arg
1 5 10 15
Gly Gly Gln Ala Ala
20

<210> 7
<211> 11
<212> PRT
<213> Mycobacterium vaccae

<400> 7

Met Pro Ile Leu Gln Val Ser Gln Thr Gly Arg
1 5 10

20251513-011802

<210> 8
 <211> 14
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (2)...(2)

<221> UNSURE
 <222> (6)...(6)

<400> 8
 Met Xaa Asp Pro Ile Xaa Leu Gln Leu Gln Val Ser Ser Thr
 1 5 10

<210> 9
 <211> 16
 <212> PRT
 <213> Mycobacterium vaccae

<400> 9
 Lys Ala Thr Tyr Val Gln Gly Gly Leu Gly Arg Ile Glu Ala Arg Val
 1 5 10 15

<210> 10
 <211> 9
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (2)...(2)

<400> 10
 Lys Xaa Gly Leu Ala Asp Leu Ala Pro
 1 5

<210> 11
 <211> 14
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (12)...(12)
 <223> Residue can be either Glu or Ile

<221> UNSURE
 <222> (2)...(2)

<400> 11
 Lys Xaa Tyr Ala Leu Ala Leu Met Ser Ala Val Xaa Ala Ala
 1 5 10

<210> 12
 <211> 11

10051543-011802

<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (10)...(10)

<400> 12
Lys Asn Pro Gln Val Ser Asp Glu Leu Xaa Thr
1 5 10

<210> 13
<211> 21
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (9)...(9)

<400> 13
Ala Pro Ala Pro Ala Ala Pro Ala Xaa Gly Asp Pro Ala Ala Val Val
1 5 10 15
Ala Ala Met Ser Thr
20

<210> 14
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (5)...(5)

<400> 14
Glu Ala Glu Val Xaa Tyr Leu Gly Gln Pro Gly Glu Leu Val Asn
1 5 10 15

<210> 15
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (2)...(2)
<223> Residue can be either Gly or Ala

<221> UNSURE
<222> (15)...(15)
<223> Residue can be either Pro or Ala

<221> UNSURE
<222> (7)...(7)

<400> 15

Ala Xaa Val Val Pro Pro Xaa Gly Pro Pro Ala Pro Gly Ala Xaa
1 5 10 15

<210> 16
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<400> 16

Ala Pro Ala Pro Asp Leu Gln Gly Pro Leu Val Ser Thr Leu Ser
1 5 10 15

<210> 17
<211> 25
<212> PRT
<213> Mycobacterium vaccae

<400> 17

Ala Thr Pro Asp Trp Ser Gly Arg Tyr Thr Val Val Thr Phe Ala Ser
1 5 10 15
Asp Lys Leu Gly Thr Ser Val Ala Ala
20 25

<210> 18
<211> 25
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (15)...(15)
<223> Residue can be either Ala or Arg

<221> UNSURE
<222> (23)...(23)
<223> Residue can be either Val or Leu

<221> UNSURE
<222> (16)...(16)

<400> 18

Ala Pro Pro Tyr Asp Asp Arg Gly Tyr Val Asp Ser Thr Ala Xaa Xaa
1 5 10 15
Ala Ser Pro Pro Thr Leu Xaa Val Val
20 25

<210> 19
<211> 8
<212> PRT
<213> Mycobacterium vaccae

<400> 19

Glu Pro Glu Gly Val Ala Pro Pro
1 5

<210> 20
<211> 25

2025.1543 "01.1802

<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (21)...(22)

<400> 20
Glu Pro Ala Gly Ile Pro Ala Gly Phe Pro Asp Val Ser Ala Tyr Ala
1 5 10 15
Ala Val Asp Pro Xaa Xaa Tyr Val Val
20 25

<210> 21
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (7)...(7)

<400> 21
Ala Pro Val Gly Pro Gly Xaa Ala Ala Tyr Val Gln Gln Val Pro
1 5 10 15

<210> 22
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<400> 22
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Met Val Pro Ser
1 5 10 15

<210> 23
<211> 19
<212> PRT
<213> Mycobacterium vaccae

<400> 23
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Met Val Pro Ser Pro
1 5 10 15
Ser Met Gly

<210> 24
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<400> 24
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Asp Val Phe Ser
1 5 10 15

<210> 25
<211> 14

10051643-011802

10051643-011802

<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (1)...(2)

<400> 25
Xaa Xaa Thr Gly Leu His Arg Leu Arg Met Met Val Pro Asn
1 5 10

<210> 26
<211> 20
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (16)...(16)
<223> Residue can be either Ser or Val

<221> UNSURE
<222> (17)...(17)
<223> Residue can be either Gln or Val

<400> 26
Val Pro Ala Asp Pro Val Gly Ala Ala Ala Gln Ala Glu Pro Ala Xaa
1 5 10 15
Xaa Arg Ile Asp
20

<210> 27
<211> 14
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (4)...(4)
<223> Residue can be either Tyr or Pro

<221> UNSURE
<222> (8)...(8)
<223> Residue can be either Val or Gly

<221> UNSURE
<222> (9)...(9)
<223> Residue can be either Ile or Tyr

<221> UNSURE
<222> (3)...(3)

<400> 27
Asp Pro Xaa Xaa Asp Ile Glu Xaa Xaa Phe Ala Arg Gly Thr
1 5 10

<210> 28

<211> 15
 <212> PRT
 <213> Mycobacterium vaccae

<400> 28
 Ala Pro Ser Leu Ser Val Ser Asp Tyr Ala Arg Asp Ala Gly Phe
 1 5 10 15

<210> 29
 <211> 16
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (2)...(2)
 <223> Residue can be either Leu or Pro

<221> UNSURE
 <222> (1)...(1)

<221> UNSURE
 <222> (5)...(5)

<221> UNSURE
 <222> (7)...(7)

<221> UNSURE
 <222> (10)...(10)

<400> 29
 Xaa Xaa Leu Ala Xaa Ala Xaa Leu Gly Xaa Thr Val Asp Ala Asp Gln
 1 5 10 15

<210> 30
 <211> 330
 <212> PRT
 <213> Mycobacterium leprae

<400> 30
 Met Lys Phe Val Asp Arg Phe Arg Gly Ala Val Ala Gly Met Leu Arg
 1 5 10 15
 Arg Leu Val Val Glu Ala Met Gly Val Ala Leu Leu Ser Ala Leu Ile
 20 25 30
 Gly Val Val Gly Ser Ala Pro Ala Glu Ala Phe Ser Arg Pro Gly Leu
 35 40 45
 Pro Val Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile
 50 55 60
 Lys Val Gln Phe Gln Asn Gly Gly Ala Asn Ser Pro Ala Leu Tyr Leu
 65 70 75 80
 Leu Asp Gly Leu Arg Ala Gln Asp Asp Phe Ser Gly Trp Asp Ile Asn
 85 90 95
 Thr Thr Ala Phe Glu Trp Tyr Tyr Gln Ser Gly Ile Ser Val Val Met
 100 105 110
 Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala
 115 120 125
 Cys Gly Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu Thr

10051643-011802

20870" E49T5002
10051643" 011802

130	135	140
Ser Glu Leu Pro Glu Tyr Leu Gln Ser Asn Lys Gln Ile Lys Pro Thr		
145	150	155
Gly Ser Ala Ala Val Gly Leu Ser Met Ala Gly Leu Ser Ala Leu Thr		160
	165	170
Leu Ala Ile Tyr His Pro Asp Gln Phe Ile Tyr Val Gly Ser Met Ser		175
	180	185
Gly Leu Leu Asp Pro Ser Asn Ala Met Gly Pro Ser Leu Ile Gly Leu		190
	195	200
Ala Met Gly Asp Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro		205
	210	215
Ser Thr Asp Pro Ala Trp Lys Arg Asn Asp Pro Thr Val Asn Val Gly		220
225	230	235
Thr Leu Ile Ala Asn Asn Thr Arg Ile Trp Met Tyr Cys Gly Asn Gly		240
	245	250
Lys Pro Thr Glu Leu Gly Gly Asn Asn Leu Pro Ala Lys Leu Leu Glu		255
	260	265
Gly Leu Val Arg Thr Ser Asn Ile Lys Phe Gln Asp Gly Tyr Asn Ala		270
	275	280
Gly Gly Gly His Asn Ala Val Phe Asn Phe Pro Asp Ser Gly Thr His		285
	290	295
Ser Trp Glu Tyr Trp Gly Glu Gln Leu Asn Asp Met Lys Pro Asp Leu		300
305	310	315
Gln Gln Tyr Leu Gly Ala Thr Pro Gly Ala		320
	325	330

<210> 31
 <211> 327
 <212> PRT
 <213> Mycobacterium leprae

<400> 31
Met Ile Asp Val Ser Gly Lys Ile Arg Ala Trp Gly Arg Trp Leu Leu
1 5 10 15
Val Gly Ala Ala Thr Leu Pro Ser Leu Ile Ser Leu Ala Gly Gly
20 25 30
Ala Ala Thr Ala Ser Ala Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr
35 40 45
Leu Gln Val Pro Ser Glu Ala Met Gly Arg Thr Ile Lys Val Gln Phe
50 55 60
Gln Asn Gly Gly Asn Gly Ser Pro Ala Val Tyr Leu Leu Asp Gly Leu
65 70 75 80
Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Ser Ala Phe
85 90 95
Glu Trp Tyr Tyr Gln Ser Gly Leu Ser Val Val Met Pro Val Gly Gly
100 105 110
Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala Cys Gly Lys Ala
115 120 125
Gly Cys Thr Thr Tyr Lys Trp Glu Thr Phe Leu Thr Ser Glu Leu Pro
130 135 140
Lys Trp Leu Ser Ala Asn Arg Ser Val Lys Ser Thr Gly Ser Ala Val
145 150 155 160
Val Gly Leu Ser Met Ala Gly Ser Ser Ala Leu Ile Leu Ala Ala Tyr
165 170 175
His Pro Asp Gln Phe Ile Tyr Ala Gly Ser Leu Ser Ala Leu Met Asp
180 185 190
Ser Ser Gln Gly Ile Glu Pro Gln Leu Ile Gly Leu Ala Met Gly Asp

1051643-011902

195	200	205
Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro Pro Asn Asp Pro		
210	215	220
Ala Trp Gln Arg Asn Asp Pro Ile Leu Gln Ala Gly Lys Leu Val Ala		
225	230	235
Asn Asn Thr His Leu Trp Val Tyr Cys Gly Asn Gly Thr Pro Ser Glu		
245	250	255
Leu Gly Gly Thr Asn Val Pro Ala Glu Phe Leu Glu Asn Phe Val His		
260	265	270
Gly Ser Asn Leu Lys Phe Gln Asp Ala Tyr Asn Gly Ala Gly Gly His		
275	280	285
Asn Ala Val Phe Asn Leu Asn Ala Asp Gly Thr His Ser Trp Glu Tyr		
290	295	300
Trp Gly Ala Gln Leu Asn Ala Met Lys Pro Asp Leu Gln Asn Thr Leu		
305	310	315
Met Ala Val Pro Arg Ser Gly		
325		

<210> 32
 <211> 338
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 32
Met Gln Leu Val Asp Arg Val Arg Gly Ala Val Thr Gly Met Ser Arg
1 5 10 15
Arg Leu Val Val Gly Ala Val Gly Ala Ala Leu Val Ser Gly Leu Val
20 25 30
Gly Ala Val Gly Gly Thr Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly
35 40 45
Leu Pro Val Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp
50 55 60
Ile Lys Val Gln Phe Gln Ser Gly Gly Ala Asn Ser Pro Ala Leu Tyr
65 70 75 80
Leu Leu Asp Gly Leu Arg Ala Gln Asp Asp Phe Ser Gly Trp Asp Ile
85 90 95
Asn Thr Pro Ala Phe Glu Trp Tyr Asp Gln Ser Gly Leu Ser Val Val
100 105 110
Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Gln Pro
115 120 125
Ala Cys Gly Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu
130 135 140
Thr Ser Glu Leu Pro Gly Trp Leu Gln Ala Asn Arg His Val Lys Pro
145 150 155 160
Thr Gly Ser Ala Val Val Gly Leu Ser Met Ala Ala Ser Ser Ala Leu
165 170 175
Thr Leu Ala Ile Tyr His Pro Gln Gln Phe Val Tyr Ala Gly Ala Met
180 185 190
Ser Gly Leu Leu Asp Pro Ser Gln Ala Met Gly Pro Thr Leu Ile Gly
195 200 205
Leu Ala Met Gly Asp Ala Gly Tyr Lys Ala Ser Asp Met Trp Gly
210 215 220
Pro Lys Glu Asp Pro Ala Trp Gln Arg Asn Asp Pro Leu Leu Asn Val
225 230 235 240
Gly Lys Leu Ile Ala Asn Asn Thr Arg Val Trp Val Tyr Cys Gly Asn
245 250 255
Gly Lys Pro Ser Asp Leu Gly Gly Asn Asn Leu Pro Ala Lys Phe Leu

1001-1003

<400> 33

11

<212> PRT
<213> Mycobacterium bovis

<400> 35

Met Thr Asp Val Ser Arg Lys Ile Arg Ala Trp Gly Arg Arg Leu Met
1 5 10 15
Ile Gly Thr Ala Ala Ala Val Val Leu Pro Gly Leu Val Gly Leu Ala
20 25 30
Gly Gly Ala Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly Leu Pro Val
35 40 45
Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Val
50 55 60
Gln Phe Gln Ser Gly Gly Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp
65 70 75 80
Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Pro
85 90 95
Ala Phe Glu Trp Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met Pro Val
100 105 110
Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala Cys Gly
115 120 125
Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Leu Leu Thr Ser Glu
130 135 140
Leu Pro Gln Trp Leu Ser Ala Asn Arg Ala Val Lys Pro Thr Gly Ser
145 150 155 160
Ala Ala Ile Gly Leu Ser Met Ala Gly Ser Ser Ala Met Ile Leu Ala
165 170 175
Ala Tyr His Pro Gln Gln Phe Ile Tyr Ala Gly Ser Leu Ser Ala Leu
180 185 190
Leu Asp Pro Ser Gln Gly Met Gly Leu Ile Gly Leu Ala Met Gly Asp
195 200 205
Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro Ser Ser Asp Pro
210 215 220
Ala Trp Glu Arg Asn Asp Pro Thr Gln Gln Ile Pro Lys Leu Val Ala
225 230 235 240
Asn Asn Thr Arg Leu Trp Val Tyr Cys Gly Asn Gly Thr Pro Asn Glu
245 250 255
Leu Gly Gly Ala Asn Ile Pro Ala Glu Phe Leu Glu Asn Phe Val Arg
260 265 270
Ser Ser Asn Leu Lys Phe Gln Asp Ala Tyr Lys Pro Ala Gly Gly His
275 280 285
Asn Ala Val Phe Asn Phe Pro Pro Asn Gly Thr His Ser Trp Glu Tyr
290 295 300
Trp Gly Ala Gln Leu Asn Ala Met Lys Gly Asp Leu Gln Ser Ser Leu
305 310 315 320
Gly Ala Gly

<210> 36
<211> 333
<212> PRT
<213> Mycobacterium leprae

<400> 36

Met Lys Phe Leu Gln Gln Met Arg Lys Leu Phe Gly Leu Ala Ala Lys
1 5 10 15
Phe Pro Ala Arg Leu Thr Ile Ala Val Ile Gly Thr Ala Leu Leu Ala
20 25 30

20251643-011802

Gly Leu Val Gly Val Val Gly Asp Thr Ala Ile Ala Val Ala Phe Ser
 35 40 45
 Lys Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser Pro Ser Met
 50 55 60
 Gly His Asp Ile Lys Ile Gln Phe Gln Gly Gly Gly Gln His Ala Val
 65 70 75 80
 Tyr Leu Leu Asp Gly Leu Arg Ala Gln Glu Asp Tyr Asn Gly Trp Asp
 85 90 95
 Ile Asn Thr Pro Ala Phe Glu Glu Tyr Tyr His Ser Gly Leu Ser Val
 100 105 110
 Ile Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser Asn Trp Tyr Gln
 115 120 125
 Pro Ser Gln Gly Asn Gly Gln His Tyr Thr Tyr Lys Trp Glu Thr Phe
 130 135 140
 Leu Thr Gln Glu Met Pro Ser Trp Leu Gln Ala Asn Lys Asn Val Leu
 145 150 155 160
 Pro Thr Gly Asn Ala Ala Val Gly Leu Ser Met Ser Gly Ser Ser Ala
 165 170 175
 Leu Ile Leu Ala Ser Tyr Tyr Pro Gln Gln Phe Pro Tyr Ala Ala Ser
 180 185 190
 Leu Ser Gly Phe Leu Asn Pro Ser Glu Gly Trp Trp Pro Thr Met Ile
 195 200 205
 Gly Leu Ala Met Asn Asp Ser Gly Gly Tyr Asn Ala Asn Ser Met Trp
 210 215 220
 Gly Pro Ser Thr Asp Pro Ala Trp Lys Arg Asn Asp Pro Met Val Gln
 225 230 235 240
 Ile Pro Arg Leu Val Ala Asn Asn Thr Arg Ile Trp Val Tyr Cys Gly
 245 250 255
 Asn Gly Ala Pro Asn Glu Leu Gly Gly Asp Asn Ile Pro Ala Lys Phe
 260 265 270
 Leu Glu Ser Leu Thr Leu Ser Thr Asn Glu Ile Phe Gln Asn Thr Tyr
 275 280 285
 Ala Ala Ser Gly Gly Arg Asn Gly Val Phe Asn Phe Pro Pro Asn Gly
 290 295 300
 Thr His Ser Trp Pro Tyr Trp Asn Gln Gln Leu Val Ala Met Lys Pro
 305 310 315 320
 Asp Ile Gln Gln Ile Leu Asn Gly Ser Asn Asn Asn Ala
 325 330

<210> 37

<211> 340

<212> PRT

<213> Mycobacterium tuberculosis

<400> 37

Met Thr Phe Phe Glu Gln Val Arg Arg Leu Arg Ser Ala Ala Thr Thr
 1 5 10 15
 Leu Pro Arg Arg Val Ala Ile Ala Met Gly Ala Val Leu Val Tyr
 20 25 30
 Gly Leu Val Gly Thr Phe Gly Gly Pro Ala Thr Ala Gly Ala Phe Ser
 35 40 45
 Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser Ala Ser Met
 50 55 60
 Gly Arg Asp Ile Lys Val Gln Phe Gln Gly Gly Gly Pro His Ala Val
 65 70 75 80
 Tyr Leu Leu Asp Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp
 85 90 95

Ile Asn Thr Pro Ala Phe Glu Glu Tyr Tyr Gln Ser Gly Leu Ser Val
100 105 110
Ile Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Thr Asp Trp Tyr Gln
115 120 125
Pro Ser Gln Ser Asn Gly Gln Asn Tyr Thr Tyr Lys Trp Glu Thr Phe
130 135 140
Leu Thr Arg Glu Met Pro Ala Trp Leu Gln Ala Asn Lys Gly Val Ser
145 150 155 160
Pro Thr Gly Asn Ala Ala Val Gly Leu Ser Met Ser Gly Gly Ser Ala
165 170 175
Leu Ile Leu Ala Ala Tyr Tyr Pro Gln Gln Phe Pro Tyr Ala Ala Ser
180 185 190
Leu Ser Gly Phe Leu Asn Pro Ser Glu Gly Trp Trp Pro Thr Leu Ile
195 200 205
Gly Leu Ala Met Asn Asp Ser Gly Gly Tyr Asn Ala Asn Ser Met Trp
210 215 220
Gly Pro Ser Ser Asp Pro Ala Trp Lys Arg Asn Asp Pro Met Val Gln
225 230 235 240
Ile Pro Arg Leu Val Ala Asn Asn Thr Arg Ile Trp Val Tyr Cys Gly
245 250 255
Asn Gly Thr Pro Ser Asp Leu Gly Gly Asp Asn Ile Pro Ala Lys Phe
260 265 270
Leu Glu Gly Leu Thr Leu Arg Thr Asn Gln Thr Phe Arg Asp Thr Tyr
275 280 285
Ala Ala Asp Gly Gly Arg Asn Gly Val Phe Asn Phe Pro Pro Asn Gly
290 295 300
Thr His Ser Trp Pro Tyr Trp Asn Glu Gln Leu Val Ala Met Lys Ala
305 310 315 320
Asp Ile Gln His Val Leu Asn Gly Ala Thr Pro Pro Ala Ala Pro Ala
325 330 335
Ala Pro Ala Ala
340

<210> 38
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe made in a lab

<400> 38
agcggctggg acatcaacac

20

<210> 39
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe made in a lab

<400> 39
cagacgcggg tgttggtggc

20

<210> 40
<211> 1211

<212> DNA

<213> Mycobacterium vaccae

<400> 40

ggtaccggaa	gctggaggat	tgacggatat	agacttcttg	acaggattcg	tgggccttgg	60
gcacgccgtt	tcggcgtcgt	ggctgtcgcg	acagcgatga	tgcctgcttt	ggtgggcctg	120
gctggagggt	cggcgaccgc	cggagcattc	tcccggccag	gtctgccggt	ggagtacctg	180
atggtgcctt	cgccgtcgat	ggggcgcgac	atcaagatcc	agttccagag	cggtaggcgag	240
aactcgccgg	ctctctacct	gctcgacggc	ctgctgctgc	aggaggactt	caacggctgg	300
gacatcaaca	ctcaggcttt	cgagtgggtt	ctcgacagcg	gcatctccgt	ggtgatgccg	360
gtcggtagcc	agtccagctt	ctacaccgac	tggtacgccc	ccgcccgtaa	caagggcccc	420
accgtgacct	acaagtggga	gaccttccct	acccaggagc	tcccgggctg	gctgcaggcc	480
aaccgcgcgg	tcaagccgac	cggcagcggc	cctgtcggtc	tgtcgatggc	gggttcggcc	540
gcgctgaacc	tggcgacctg	gcacccggag	cagttcatct	acgcgggctc	gatgtccggc	600
ttcctgaacc	cctccgaggg	ctggtggcgg	ttcctgatca	acatctcgat	gggtgacgcc	660
ggcggcttca	aggccgacga	catgtggggc	aagaccgagg	ggatcccaac	agcggttgga	720
cagcgcaacg	atccgatgct	gaacatccc	accctggctg	ccaacaacac	ccgtatctgg	780
gtctactcgg	gtaacggcca	gcccaccgag	ctcggcgggc	gcgacctgcc	cgccacgttc	840
ctcgaaggct	tgaccatccg	caccaacgag	accttccgcg	acaactacat	cgccgcgggt	900
ggccacaacg	gtgtgttcaa	cttcccggcc	aacggcacgc	acaactgggc	gtactggggg	960
cgcgagctgc	aggcgatgaa	gcctgacctg	caggcgacac	ttctctgacg	gttgacgaa	1020
acgaagcccc	cggccgattg	cggccgaggg	tttcgtcgtc	cggggctact	gtggccgaca	1080
taaccgaaat	caacgcgatg	gtggctcatc	aggaacgcgg	aggggggtcat	tgcgctacga	1140
cacgaggtgg	gcgagcaatc	cttctcgccc	gacggagagg	tcaacatcca	cgtcgagtac	1200
tccagctga	a					1211

<210> 41

<211> 485

<212> DNA

<213> Mycobacterium vaccae

<400> 41

agcggctggg	acatcaaac	cgccgccttc	gagtggtag	tcgactcggg	tctcgcggtg	60
atcatgccc	tcggcgggca	gtccagcttc	tacagcgact	ggtacagccc	ggcctgcggg	120
aaggccggct	gccagacct	caagtgggag	acgttccctg	cccaggagct	gccggcctac	180
ctcgccgcca	acaagggggg	cgacccgaac	cgcacgcggc	ccgtcgggtc	gtccatggcc	240
ggttcggcgg	cgtgacgct	ggcgatctac	cacccgcagc	agttccagta	cgccgggtcg	300
ctgtcgggct	acctgaaccc	gtccgagggg	tggtggccga	tgtgatcaa	catctcgatg	360
ggtgacgcgg	gcggctacaa	ggccaacgac	atgtggggtc	caccgaagga	cccagagcgc	420
gcctggaagc	gcaacgaccc	gatggtcaac	atcggaagc	tggtggccaa	caacaccccc	480
ctctc						485

<210> 42

<211> 1052

<212> DNA

<213> Mycobacterium vaccae

<400> 42

gttgatgaga	aaggtagggt	gtttgccgtt	atgaagttca	cagagaagtg	gcgggggtcc	60
gcaaaggcgg	cgatgcaccg	ggtgggcgtt	gccgatatgg	ccgccgttgc	gctgcccggg	120
ctgatcggct	tcgccggggg	ttcggcaacg	gccggggcat	tctcccggcc	cggctcttcc	180
gtcgagtacc	tcgacgtggt	ctcgccgtcg	atgggcccgc	acatccgggt	ccagttccag	240
ggtggcggtg	ctcatgcggg	ctacctgctc	gacgggtctg	gtgcccagga	cgactacaac	300
ggctgggaca	tcaacacccc	tgcgttcgag	tgggtctacg	agtcgggctt	gtcgacgatc	360
atgccggctg	gcggacagtc	cagcttctac	agcgactggg	accagccgtc	tcggggcaac	420
gggcagaact	acacctacaa	gtgggagacg	ttcctgaccc	aggagctgcc	gacgtggctg	480
gaggccaacc	gcggagtgtc	gcgcaccggc	aacgcgttcg	tcggcctgtc	gatggcgggc	540

agcgcggcgc tgacctacgc gatccatcac ccgcagcagt tcctctacgc ctctgcgctg 600
tcaggcttcc tgaacccgtc cgagggtcgg tggccgatgc tgatcgggct ggcgatgaac 660
gacgcaggcg gcttcaacgc cgagagcatg tggggcccgt cctcggaccc ggcgtggaag 720
cgcaacgacc cgatggtcaa catcaaccag ctggtggcca acaacacccg gatctggatc 780
tactgcgga ccggcaccgc gtcggagctg gacaccggga ccccgggcca gaacctgatg 840
gccgcgcagt tcctcgaagg attcacgttg cggaccaaca tcgccttccg tgacaactac 900
atcgagccg gcggcaccaa cgggtgtcttc aacttcccgg cctcggggcac ccacagctgg 960
gggtactggg ggcagcagct gcagcagatg aagcccgaaca tccagcgggt tctgggagct 1020
caggccaccg cctagccacc caccacacac cc 1052

<210> 43
<211> 326
<212> PRT
<213> Mycobacterium vaccae

<400> 43

Met Arg Leu Leu Asp Arg Ile Arg Gly Pro Trp Ala Arg Arg Phe Gly
1 5 10 15
Val Val Ala Val Ala Thr Ala Met Met Pro Ala Leu Val Gly Leu Ala
20 25 30
Gly Gly Ser Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly Leu Pro Val
35 40 45
Glu Tyr Leu Met Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Ile
50 55 60
Gln Phe Gln Ser Gly Gly Glu Asn Ser Pro Ala Leu Tyr Leu Leu Asp
65 70 75 80
Gly Leu Arg Ala Gln Glu Asp Phe Asn Gly Trp Asp Ile Asn Thr Gln
85 90 95
Ala Phe Glu Trp Phe Leu Asp Ser Gly Ile Ser Val Val Met Pro Val
100 105 110
Gly Gly Gln Ser Ser Phe Tyr Thr Asp Trp Tyr Ala Pro Ala Arg Asn
115 120 125
Lys Gly Pro Thr Val Thr Tyr Lys Trp Glu Thr Phe Leu Thr Gln Glu
130 135 140
Leu Pro Gly Trp Leu Gln Ala Asn Arg Ala Val Lys Pro Thr Gly Ser
145 150 155 160
Gly Pro Val Gly Leu Ser Met Ala Gly Ser Ala Ala Leu Asn Leu Ala
165 170 175
Thr Trp His Pro Glu Gln Phe Ile Tyr Ala Gly Ser Met Ser Gly Phe
180 185 190
Leu Asn Pro Ser Glu Gly Trp Trp Pro Phe Leu Ile Asn Ile Ser Met
195 200 205
Gly Asp Ala Gly Gly Phe Lys Ala Asp Asp Met Trp Gly Lys Thr Glu
210 215 220
Gly Ile Pro Thr Ala Val Gly Gln Arg Asn Asp Pro Met Leu Asn Ile
225 230 235 240
Pro Thr Leu Val Ala Asn Asn Thr Arg Ile Trp Val Tyr Cys Gly Asn
245 250 255
Gly Gln Pro Thr Glu Leu Gly Gly Gly Asp Leu Pro Ala Thr Phe Leu
260 265 270
Glu Gly Leu Thr Ile Arg Thr Asn Glu Thr Phe Arg Asp Asn Tyr Ile
275 280 285
Ala Ala Gly Gly His Asn Gly Val Phe Asn Phe Pro Ala Asn Gly Thr
290 295 300
His Asn Trp Ala Tyr Trp Gly Arg Glu Leu Gln Ala Met Lys Pro Asp
305 310 315 320
Leu Gln Ala His Leu Leu

2005-16-13 04:18:02

<210> 44
 <211> 161
 <212> PRT
 <213> Mycobacterium vaccae

<400> 44
 Ser Gly Trp Asp Ile Asn Thr Ala Ala Phe Glu Trp Tyr Val Asp Ser
 1 5 10 15
 Gly Leu Ala Val Ile Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser
 20 25 30
 Asp Trp Tyr Ser Pro Ala Cys Gly Lys Ala Gly Cys Gln Thr Tyr Lys
 35 40 45
 Trp Glu Thr Phe Leu Thr Gln Glu Leu Pro Ala Tyr Leu Ala Ala Asn
 50 55 60
 Lys Gly Val Asp Pro Asn Arg Asn Ala Ala Val Gly Leu Ser Met Ala
 65 70 75 80
 Gly Ser Ala Ala Leu Thr Leu Ala Ile Tyr His Pro Gln Gln Phe Gln
 85 90 95
 Tyr Ala Gly Ser Leu Ser Gly Tyr Leu Asn Pro Ser Glu Gly Trp Trp
 100 105 110
 Pro Met Leu Ile Asn Ile Ser Met Gly Asp Ala Gly Gly Tyr Lys Ala
 115 120 125
 Asn Asp Met Trp Gly Pro Pro Lys Asp Pro Ser Ser Ala Trp Lys Arg
 130 135 140
 Asn Asp Pro Met Val Asn Ile Gly Lys Leu Val Ala Asn Asn Thr Pro
 145 150 155 160
 Leu

<210> 45
 <211> 334
 <212> PRT
 <213> Mycobacterium vaccae

<400> 45
 Met Lys Phe Thr Glu Lys Trp Arg Gly Ser Ala Lys Ala Ala Met His
 1 5 10 15
 Arg Val Gly Val Ala Asp Met Ala Ala Val Ala Leu Pro Gly Leu Ile
 20 25 30
 Gly Phe Ala Gly Gly Ser Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly
 35 40 45
 Leu Pro Val Glu Tyr Leu Asp Val Phe Ser Pro Ser Met Gly Arg Asp
 50 55 60
 Ile Arg Val Gln Phe Gln Gly Gly Gly Thr His Ala Val Tyr Leu Leu
 65 70 75 80
 Asp Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr
 85 90 95
 Pro Ala Phe Glu Trp Phe Tyr Glu Ser Gly Leu Ser Thr Ile Met Pro
 100 105 110
 Val Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Gln Pro Ser Arg
 115 120 125
 Gly Asn Gly Gln Asn Tyr Thr Tyr Lys Trp Glu Thr Phe Leu Thr Gln
 130 135 140
 Glu Leu Pro Thr Trp Leu Glu Ala Asn Arg Gly Val Ser Arg Thr Gly
 145 150 155 160

Asn Ala Phe Val Gly Leu Ser Met Ala Gly Ser Ala Ala Leu Thr Tyr
 165 170 175
 Ala Ile His His Pro Gln Gln Phe Ile Tyr Ala Ser Ser Leu Ser Gly
 180 185 190
 Phe Leu Asn Pro Ser Glu Gly Trp Trp Pro Met Leu Ile Gly Leu Ala
 195 200 205
 Met Asn Asp Ala Gly Gly Phe Asn Ala Glu Ser Met Trp Gly Pro Ser
 210 215 220
 Ser Asp Pro Ala Trp Lys Arg Asn Asp Pro Met Val Asn Ile Asn Gln
 225 230 235 240
 Leu Val Ala Asn Asn Thr Arg Ile Trp Ile Tyr Cys Gly Thr Gly Thr
 245 250 255
 Pro Ser Glu Leu Asp Thr Gly Thr Pro Gly Gln Asn Leu Met Ala Ala
 260 265 270
 Gln Phe Leu Glu Gly Phe Thr Leu Arg Thr Asn Ile Ala Phe Arg Asp
 275 280 285
 Asn Tyr Ile Ala Ala Gly Gly Thr Asn Gly Val Phe Asn Phe Pro Ala
 290 295 300
 Ser Gly Thr His Ser Trp Gly Tyr Trp Gly Gln Gln Leu Gln Gln Met
 305 310 315 320
 Lys Pro Asp Ile Gln Arg Val Leu Gly Ala Gln Ala Thr Ala
 325 330

<210> 46
 <211> 795
 <212> DNA
 <213> Mycobacterium vaccae

<400> 46

ctgccgcggg	tttgccatct	cttgggtcct	gggtcgggag	gccatgttct	gggtaacgat	60
ccggtaccgt	ccggcgatgt	gaccaacatg	cgaacagcga	caacgaagct	aggagcggcg	120
ctcggcgag	cagcatttgt	ggccgccacg	gggatgggtca	gcgcggcgac	ggcgaacgcc	180
caggaagggc	accaggtccg	ttacacgctc	acctcggccg	gcgcttacga	gttcgacctg	240
ttctatctga	cgacgcagcc	gccgagcatg	caggcggttca	acgccgacgc	gtatgcgttc	300
gccaagcggg	agaaggtcag	cctcgccccg	gggtgtgccg	gggtcttcga	aaccacgatg	360
gccgaccga	actgggcgat	ccttcagggtc	agcagcacca	cccgcggtgg	gcaggccgcc	420
ccgaacgcgc	actgcgacat	cgccgtcgat	ggccaggagg	tgctcagcca	gcacgacgac	480
ccctacaacg	tgcggtgcc	gctcggtcag	tggtgagtca	cctcgccgag	agtccggcca	540
gcgcggcg	cagcggtctg	cggtgcagca	ccccgaggcg	ctgggtcgcg	cgggtcagcg	600
cgacgtaaag	atcgctggcc	ccgcgcggcc	cctcggcgag	gatctgctcc	gggtagacca	660
ccagcacggc	gtctaactcc	agacccttgg	tctgcgtggg	tgccaccgcg	cccgggacac	720
cgggcggggc	gatcaccacg	ctgggtgccct	cccgggtccgc	ctccgcacgc	acgaaatcgt	780
cgatggcaec	ggcga					795

<210> 47
 <211> 142
 <212> PRT
 <213> Mycobacterium vaccae

<400> 47

Met Arg Thr Ala Thr Lys Leu Gly Ala Ala Leu Gly Ala Ala Ala
 1 5 10 15
 Leu Val Ala Ala Thr Gly Met Val Ser Ala Ala Thr Ala Asn Ala Gln
 20 25 30
 Glu Gly His Gln Val Arg Tyr Thr Leu Thr Ser Ala Gly Ala Tyr Glu
 35 40 45
 Phe Asp Leu Phe Tyr Leu Thr Thr Gln Pro Pro Ser Met Gln Ala Phe

50	55	60
Asn Ala Asp Ala Tyr Ala Phe Ala Lys Arg Glu Lys Val Ser Leu Ala		
65	70	75
Pro Gly Val Pro Trp Val Phe Glu Thr Thr Met Ala Asp Pro Asn Trp		
	85	90
Ala Ile Leu Gln Val Ser Ser Thr Thr Arg Gly Gly Gln Ala Ala Pro		
	100	105
Asn Ala His Cys Asp Ile Ala Val Asp Gly Gln Glu Val Leu Ser Gln		
	115	120
His Asp Asp Pro Tyr Asn Val Arg Cys Gln Leu Gly Gln Trp		
	130	140

<210> 48
 <211> 300
 <212> DNA
 <213> Mycobacterium vaccae

<400> 48
 gccagtgcgc caacgggtttt catcgatgcc gcacacaacc ccggtggggc ctgcgcttgc 60
 cgaaggctgc gcgacgagtt cgacttccgg tatctcgtcg gcgtcgtctc ggtgatgggg 120
 gacaaggacg tggacgggat ccgccaggac ccgggcggtgc cggacggggc cggctctcgca 180
 ctgttcgtct cgggcgacaa ccttcgaaag ggtgcggcgc tcaacacgat ccagatcgcc 240
 gagctgctgg ccgcccagtt gtaagtgttc cgccgaaatt gcattccacg ccgataatcg 300

<210> 49
 <211> 563
 <212> DNA
 <213> Mycobacterium vaccae

<400> 49
 ggatcctcgg ccggtcgaag agtccgcgcc gaggtggatg tgacgctgga cggctacgag 60
 ttcagtcggg cctgcgaggc gctgtaccac ttgcgctggg acgagttctg cgactgggat 120
 gtcgagcttg ccaaagtgcg actgggtgaa ggtttctcgc acaccacggc cgtgttggcc 180
 accgtgctcg atgtgctgct caagcttctg caccggtca tgccgttcgt caccgaggtg 240
 ctgtggaagg ccctgaccgg gcgggcccgc gcgagcgaaac gtctgggaaa tgtggagtca 300
 ctggtcgtcg cggactggcc cacgcccacc ggatacgcgc tggatcaggc tgccgcacaa 360
 cggatcgccg acacccagaa gttgatcacc gaggtgcgcc ggttccgcag cgatcagggt 420
 ctggccgacc gccagcgggt gcctgcccgg ttgtccggca tcgacaccgc gggctctggac 480
 gccatgtcc cggcgggtgc cgcgctggcc tggcttgacc gagggatgat agggcttcac 540
 cgcgtccgaa tcggtcgagg tgc 563

<210> 50
 <211> 434
 <212> DNA
 <213> Mycobacterium vaccae

<400> 50
 gggccggggc cgaggatgag caagttcgaa gtcgtcaccg ggatggcggt cgcggtttc 60
 gccgacgcgc ccatcgacgt cgcgctcgtc gaggtcgggc tcggtgggtc ctgggacgcg 120
 acgaacgtgg tgaacgcacc ggtcgcggtc atcaccgccg tcgggggtga ccacaccgac 180
 tacctcgggtg acacgatcgc cgagatcgcc ggggagaagg ccggaatca tcaccgccca 240
 gccgacgacc tgggtgccgac cgacaccgtc gccgtgctgg ccggcaggt tcccagggcc 300
 atggaggtgc tgctggccca ggcgggtgcgc tcggatgcgg ctgtagcgcg cgaggattcg 360
 gagtgcgcgg tgctgggccc tcaggtcgcc atcggcggca gctgctccgg ttgcaggggg 420
 tcggtggcgt ctac 434

<210> 51

<211> 438
 <212> DNA
 <213> Mycobacterium vaccae

<400> 51

ggatcc	cact	ccgcgc	ccgg	cggcgg	ccag	ctggt	acggc	cattcc	agcg	tgctga	tcca		60
ggtcga	caggc	taccgc	gtgc	tggccg	accc	ggtgt	ggagc	aacaga	tgtt	cgccct	cacg		120
ggcgg	tcgga	ccgcag	cgca	tgcacg	acgt	cccgg	tgccg	ctggag	ggcg	ttccc	gccgt		180
ggacgc	ggtg	gtgat	cgcc	acgacc	acta	cgacc	acctc	gacat	cga	ccatc	gtcgc		240
gttggc	gcac	acccag	cggg	ccccgt	tctgt	ggtgc	cggtt	ggcat	cggcg	cacac	ctgcg		300
caagt	ggggc	gtcccc	cgagg	cgcgga	tctgt	cgagt	tggac	tggca	cgaag	cccac	cgcat		360
cgacga	ctgt	acgtgt	gtct	gcacccc	cg	ccggc	acttc	tccgg	cgggt	tggtt	ctccc		420
cgactc	gacg	ctgtgg	ggc										438

<210> 52
 <211> 87
 <212> PRT
 <213> Mycobacterium vaccae

<400> 52

Ala	Ser	Ala	Pro	Thr	Val	Phe	Ile	Asp	Ala	Ala	His	Asn	Pro	Gly	Gly	
1				5				10						15		
Pro	Cys	Ala	Cys	Arg	Arg	Leu	Arg	Asp	Glu	Phe	Asp	Phe	Arg	Tyr	Leu	
			20					25					30			
Val	Gly	Val	Val	Ser	Val	Met	Gly	Asp	Lys	Asp	Val	Asp	Gly	Ile	Arg	
		35					40					45				
Gln	Asp	Pro	Gly	Val	Pro	Asp	Gly	Arg	Gly	Leu	Ala	Leu	Phe	Val	Ser	
	50					55					60					
Gly	Asp	Asn	Leu	Arg	Lys	Gly	Ala	Ala	Leu	Asn	Thr	Ile	Gln	Ile	Ala	
	65				70					75					80	
Glu	Leu	Leu	Ala	Ala	Gln	Leu										
				85												

<210> 53
 <211> 175
 <212> PRT
 <213> Mycobacterium vaccae

<400> 53

Gly	Ser	Ser	Ala	Gly	Ser	Arg	Val	Arg	Ala	Glu	Val	Asp	Val	Thr	Leu	
1				5				10						15		
Asp	Gly	Tyr	Glu	Phe	Ser	Arg	Ala	Cys	Glu	Ala	Leu	Tyr	His	Phe	Ala	
			20					25					30			
Trp	Asp	Glu	Phe	Cys	Asp	Trp	Tyr	Val	Glu	Leu	Ala	Lys	Val	Gln	Leu	
		35					40					45				
Gly	Glu	Gly	Phe	Ser	His	Thr	Thr	Ala	Val	Leu	Ala	Thr	Val	Leu	Asp	
	50					55					60					
Val	Leu	Leu	Lys	Leu	Leu	His	Pro	Val	Met	Pro	Phe	Val	Thr	Glu	Val	
	65				70					75					80	
Leu	Trp	Lys	Ala	Leu	Thr	Gly	Arg	Ala	Gly	Ala	Ser	Glu	Arg	Leu	Gly	
			85					90						95		
Asn	Val	Glu	Ser	Leu	Val	Val	Ala	Asp	Trp	Pro	Thr	Pro	Thr	Gly	Tyr	
		100						105					110			
Ala	Leu	Asp	Gln	Ala	Ala	Ala	Gln	Arg	Ile	Ala	Asp	Thr	Gln	Lys	Leu	
		115					120					125				
Ile	Thr	Glu	Val	Arg	Arg	Phe	Arg	Ser	Asp	Gln	Gly	Leu	Ala	Asp	Arg	
	130					135					140					

2025.10.13 01:18:02

Gln Arg Val Pro Ala Arg Leu Ser Gly Ile Asp Thr Ala Gly Leu Asp
 145 150 155 160
 Ala His Val Pro Ala Val Arg Ala Leu Ala Trp Leu Asp Arg Gly
 165 170 175

<210> 54
 <211> 144
 <212> PRT
 <213> Mycobacterium vaccae

<400> 54
 Gly Pro Gly Pro Arg Asn Ser Lys Phe Glu Val Val Thr Gly Met Ala
 1 5 10 15
 Phe Ala Ala Phe Ala Asp Ala Pro Ile Asp Val Ala Val Val Glu Val
 20 25 30
 Gly Leu Gly Gly Arg Trp Asp Ala Thr Asn Val Val Asn Ala Pro Val
 35 40 45
 Ala Val Ile Thr Pro Ile Gly Val Asp His Thr Asp Tyr Leu Gly Asp
 50 55 60
 Thr Ile Ala Glu Ile Ala Gly Glu Lys Ala Gly Asn His His Pro Pro
 65 70 75 80
 Ala Asp Asp Leu Val Pro Thr Asp Thr Val Ala Val Leu Ala Arg Gln
 85 90 95
 Val Pro Glu Ala Asn Glu Val Leu Leu Ala Gln Ala Val Arg Ser Asp
 100 105 110
 Ala Ala Val Ala Arg Glu Asp Ser Glu Cys Ala Val Leu Gly Arg Gln
 115 120 125
 Val Ala Ile Gly Gly Ser Cys Ser Gly Cys Arg Gly Ser Val Ala Ser
 130 135 140

<210> 55
 <211> 145
 <212> PRT
 <213> Mycobacterium vaccae

<400> 55
 Asp Pro Thr Pro Ala Pro Ala Ala Ala Ser Trp Tyr Gly His Ser Ser
 1 5 10 15
 Val Leu Ile Glu Val Asp Gly Tyr Arg Val Leu Ala Asp Pro Val Trp
 20 25 30
 Ser Asn Arg Cys Ser Pro Ser Arg Ala Val Gly Pro Gln Arg Met His
 35 40 45
 Asp Val Pro Val Pro Leu Glu Ala Leu Pro Ala Val Asp Ala Val Val
 50 55 60
 Ile Ser Asn Asp His Tyr Asp His Leu Asp Ile Asp Thr Ile Val Ala
 65 70 75 80
 Leu Ala His Thr Gln Arg Ala Pro Phe Val Val Pro Leu Gly Ile Gly
 85 90 95
 Ala His Leu Arg Lys Trp Gly Val Pro Glu Ala Arg Ile Val Glu Leu
 100 105 110
 Asp Trp His Glu Ala His Arg Ile Asp Asp Leu Thr Leu Val Cys Thr
 115 120 125
 Pro Ala Arg His Phe Ser Gly Arg Leu Phe Ser Arg Asp Ser Thr Leu
 130 135 140
 Trp
 145

10051643.011802

2025-10-10 10:54:04

<210> 56
<211> 10
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (1)...(1)
<223> Residue can be either Gly, Ile, Leu or Val

<221> UNSURE
<222> (2)...(2)
<223> Residue can be either Ile, Leu, Gly, or Ala

<221> UNSURE
<222> (5)...(5)

<221> UNSURE
<222> (9)...(9)

<400> 56

Xaa Xaa Ala Pro Xaa Gly Asp Ala Xaa Arg
1 5 10

<210> 57
<211> 8
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (7)...(7)
<223> Residue can be either Ile or Leu

<400> 57

Pro Glu Ala Glu Ala Asn Xaa Arg
1 5

<210> 58
<211> 11
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (4)...(4)
<223> Residue can be either Gln or Gly

<221> UNSURE
<222> (5)...(5)
<223> Residue can be either Gly or Gln

<400> 58

Thr Ala Asn Xaa Xaa Glu Tyr Tyr Asp Asn Arg
1 5 10

<210> 59

<211> 34
 <212> PRT
 <213> Mycobacterium vaccae

<400> 59
 Asn Ser Pro Arg Ala Glu Ala Glu Ala Asn Leu Arg Gly Tyr Phe Thr
 1 5 10 15
 Ala Asn Pro Ala Glu Tyr Tyr Asp Leu Arg Gly Ile Leu Ala Pro Ile
 20 25 30
 Gly Asp

<210> 60
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 60
 ccggtgggcc cgggctgcgc 20

<210> 61
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 61
 tggccggcca ccacgtggta 20

<210> 62
 <211> 313
 <212> DNA
 <213> Mycobacterium vaccae

<400> 62
 gccggtgggc cgggctgcg cggaatacgc ggcagccaat cccactgggc cggcctcggt 60
 gcaggaatg tcgcaggacc cggtcgcggt ggcggcctcg aacaatccgg agttgacaac 120
 gctgtacggc tgcactgtcg ggccagctca atccgcaagt aaacctgggtg gacaccctca 180
 acagcgggtca gtacacgggtg ttcgcaccga ccaacgcggc atttagcaag ctgccggcat 240
 ccacgatcga cgagctcaag accaattcgt cactgctgac cagcatcctg acctaccacg 300
 tgggtggccgg cca 313

<210> 63
 <211> 18
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (7) ... (17)

<400> 63

2025-10-13 10:54:43

Glu Pro Ala Gly Pro Leu Pro Xaa Tyr Asn Glu Arg Leu His Thr Leu
 1 5 10 15
 Xaa Gln

<210> 64
 <211> 25
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (21)...(21)

<400> 64
 Gly Leu Asp Asn Glu Leu Ser Leu Val Asp Gly Gln Gly Arg Thr Leu
 1 5 10 15
 Thr Val Gln Gln Xaa Asp Thr Phe Leu
 20 25

<210> 65
 <211> 26
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (3)...(3)

<221> UNSURE
 <222> (21)...(22)

<221> UNSURE
 <222> (24)...(24)

<400> 65
 Asp Pro Xaa Pro Asp Ile Glu Val Glu Phe Ala Arg Gly Thr Gly Ala
 1 5 10 15
 Glu Pro Gly Leu Xaa Xaa Val Xaa Asp Ala
 20 25

<210> 66
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 66
 accgccctcg agttctcccg gccaggtctg cc

32

<210> 67
 <211> 32
 <212> DNA
 <213> Artificial Sequence

10051643.01802

<220>

<223> Made in a lab

<400> 67

aagcacgagc tcagtctctt ccacgcggac gt

32

<210> 68

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<400> 68

catggatcca ttctcccggc ccggtcttcc

30

<210> 69

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<400> 69

tttgaattct aggcggtggc ctgagc

26

<210> 70

<211> 161

<212> PRT

<213> Mycobacterium vaccae

<400> 70

Ser	Gly	Trp	Asp	Ile	Asn	Thr	Ala	Ala	Phe	Glu	Trp	Tyr	Val	Asp	Ser
1				5					10					15	
Gly	Leu	Ala	Val	Ile	Met	Pro	Val	Gly	Gly	Gln	Ser	Ser	Phe	Tyr	Ser
			20					25					30		
Asp	Trp	Tyr	Ser	Pro	Ala	Cys	Gly	Lys	Ala	Gly	Cys	Gln	Thr	Tyr	Lys
		35					40					45			
Trp	Glu	Thr	Phe	Leu	Thr	Gln	Glu	Leu	Pro	Ala	Tyr	Leu	Ala	Ala	Asn
	50					55					60				
Lys	Gly	Val	Asp	Pro	Asn	Arg	Asn	Ala	Ala	Val	Gly	Leu	Ser	Met	Ala
65					70					75				80	
Gly	Ser	Ala	Ala	Leu	Thr	Leu	Ala	Ile	Tyr	His	Pro	Gln	Gln	Phe	Gln
			85						90					95	
Tyr	Ala	Gly	Ser	Leu	Ser	Gly	Tyr	Leu	Asn	Pro	Ser	Glu	Gly	Trp	Trp
		100						105					110		
Pro	Met	Leu	Ile	Asn	Ile	Ser	Met	Gly	Asp	Ala	Gly	Gly	Tyr	Lys	Ala
		115					120					125			
Asn	Asp	Met	Trp	Gly	Arg	Thr	Glu	Asp	Pro	Ser	Ser	Ala	Trp	Lys	Arg
	130					135					140				
Asn	Asp	Pro	Met	Val	Asn	Ile	Gly	Lys	Leu	Val	Ala	Asn	Asn	Thr	Pro
145					150					155					160
Leu															

<210> 71
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 71
 gagagactcg agaacgcca ggaagggcac cag 33

<210> 72
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 72
 gagagactcg agtgactcac cactgaccga gc 32

<210> 73
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<221> unsure
 <222> (3)...(3)

<221> unsure
 <222> (6)...(6)

<221> unsure
 <222> (9)...(9)

<221> unsure
 <222> (15)...(15)

<400> 73
 ggngcngcnc argcngarcc 20

<210> 74
 <211> 825
 <212> DNA
 <213> Mycobacterium vaccae

<400> 74
 ttggatccca ctcccgcgcc ggcggcggcc agctggtacg gccattccag cgtgctgatc 60
 gaggtcgacg gctaccgcgt gctggccgac ccggtgtgga gcaacagatg ttcgccctca 120
 cgggcggtcg gaccgcagcg catgcacgac gtcccgggtgc cgctggaggc gcttcccgcc 180
 gtggacgcgc tgggtgatcag ccacgaccac tacgaccacc tcgacatcga caccatcgtc 240
 gcgttggcgc acacccagcg ggccccgttc gtggtgccgt tgggcatcgg cgcacacctg 300
 cgcaagtggg gcgtccccga ggcgcggatc gtcgagttgg actggcacga agcccaccgc 360

atagacgacc	tgacgtggt	ctgcaccccc	gcccggcact	tctccggacg	gttggttctcc	420
cgcgactcga	cgctgtgggc	gtcgtgggtg	gtcaccggct	cgtcgcacaa	ggcgttcttc	480
ggtggcgaca	ccgatacac	gaagagcttc	gccgagatcg	gcgacgagta	cggtccgttc	540
gatctgacct	tgctgccgat	cggggcctac	catcccgcgt	tcgccgacat	ccacatgaac	600
cccaggagg	cggtgcgcgc	ccatctggac	ctgaccgagg	tggacaacag	cctgatggtg	660
cccatccact	gggcgacatt	ccgcctcgcc	ccgcatccgt	ggtccgagcc	cgccgaacgc	720
ctgctgaccg	ctgccgacgc	cgagcgggta	cgcctgaccg	tgccgattcc	cggtcagcgg	780
gtggacccgg	agtcgacggt	cgacccgtgg	tggcggttct	gaacc		825

<210> 75
 <211> 273
 <212> PRT
 <213> Mycobacterium vaccae

<400> 75

Leu	Asp	Pro	Thr	Pro	Ala	Pro	Ala	Ala	Ala	Ser	Trp	Tyr	Gly	His	Ser
1				5					10					15	
Ser	Val	Leu	Ile	Glu	Val	Asp	Gly	Tyr	Arg	Val	Leu	Ala	Asp	Pro	Val
			20					25					30		
Trp	Ser	Asn	Arg	Cys	Ser	Pro	Ser	Arg	Ala	Val	Gly	Pro	Gln	Arg	Met
		35					40					45			
His	Asp	Val	Pro	Val	Pro	Leu	Glu	Ala	Leu	Pro	Ala	Val	Asp	Ala	Val
	50					55					60				
Val	Ile	Ser	His	Asp	His	Tyr	Asp	His	Leu	Asp	Ile	Asp	Thr	Ile	Val
65					70				75					80	
Ala	Leu	Ala	His	Thr	Gln	Arg	Ala	Pro	Phe	Val	Val	Pro	Leu	Gly	Ile
				85					90					95	
Gly	Ala	His	Leu	Arg	Lys	Trp	Gly	Val	Pro	Glu	Ala	Arg	Ile	Val	Glu
			100					105					110		
Leu	Asp	Trp	His	Glu	Ala	His	Arg	Ile	Asp	Asp	Leu	Thr	Leu	Val	Cys
		115					120					125			
Thr	Pro	Ala	Arg	His	Phe	Ser	Gly	Arg	Leu	Phe	Ser	Arg	Asp	Ser	Thr
	130					135					140				
Leu	Trp	Ala	Ser	Trp	Val	Val	Thr	Gly	Ser	Ser	His	Lys	Ala	Phe	Phe
					150					155					160
Gly	Gly	Asp	Thr	Gly	Tyr	Thr	Lys	Ser	Phe	Ala	Glu	Ile	Gly	Asp	Glu
				165					170					175	
Tyr	Gly	Pro	Phe	Asp	Leu	Thr	Leu	Leu	Pro	Ile	Gly	Ala	Tyr	His	Pro
			180					185					190		
Ala	Phe	Ala	Asp	Ile	His	Met	Asn	Pro	Glu	Glu	Ala	Val	Arg	Ala	His
		195					200					205			
Leu	Asp	Leu	Thr	Glu	Val	Asp	Asn	Ser	Leu	Met	Val	Pro	Ile	His	Trp
	210					215					220				
Ala	Thr	Phe	Arg	Leu	Ala	Pro	His	Pro	Trp	Ser	Glu	Pro	Ala	Glu	Arg
225					230				235					240	
Leu	Leu	Thr	Ala	Ala	Asp	Ala	Glu	Arg	Val	Arg	Leu	Thr	Val	Pro	Ile
				245				250						255	
Pro	Gly	Gln	Arg	Val	Asp	Pro	Glu	Ser	Thr	Phe	Asp	Pro	Trp	Trp	Arg
			260				265						270		
Phe															

<210> 76
 <211> 10
 <212> PRT
 <213> Mycobacterium vaccae

<400> 76
Ala Lys Thr Ile Ala Tyr Asp Glu Glu Ala
1 5 10

<210> 77
<211> 337
<212> DNA
<213> Mycobacterium vaccae

<400> 77
gatccctaca tcctgctggt cagctccaag gtgtcgaccg tcaaggatct gctcccgtg 60
ctggagaagg tcatccaggc cggcaagccg ctgctgatca tcgccgagga cgtcgagggc 120
gaggccctgt ccacgctggt ggtcaacaag atccgcggca cttcaagtc cgtcgccgtc 180
aaggctccgg gcttcggtga ccgcccgaag gcgatgctgc aggacatggc catcctcacc 240
ggtggtcagg tcgtcagcga aagagtcggg ctgtccctgg agaccgccga cgtctcgctg 300
ctgggccagg cccgcaaggc cgtcgtcacc aaggaca 337

<210> 78
<211> 112
<212> PRT
<213> Mycobacterium vaccae

<400> 78
Asp Pro Tyr Ile Leu Leu Val Ser Ser Lys Val Ser Thr Val Lys Asp
1 5 10 15
Leu Leu Pro Leu Leu Glu Lys Val Ile Gln Ala Gly Lys Pro Leu Leu
20 25 30
Ile Ile Ala Glu Asp Val Glu Gly Glu Ala Leu Ser Thr Leu Val Val
35 40 45
Asn Lys Ile Arg Gly Thr Phe Lys Ser Val Ala Val Lys Ala Pro Gly
50 55 60
Phe Gly Asp Arg Arg Lys Ala Met Leu Gln Asp Met Ala Ile Leu Thr
65 70 75 80
Gly Gly Gln Val Val Ser Glu Arg Val Gly Leu Ser Leu Glu Thr Ala
85 90 95
Asp Val Ser Leu Leu Gly Gln Ala Arg Lys Val Val Val Thr Lys Asp
100 105 110

<210> 79
<211> 360
<212> DNA
<213> Mycobacterium vaccae

<400> 79
ccgtacgaga agatcggcgc tgagctggtc aaagaggctc ccaagaagac cgacgacgtc 60
gcgggacgac gcaccaccac cgccaccgtg ctgctcagg ctctgggttcg cgaaggcctg 120
cgcaacgtcg cagccggcgc caaccgcgtc ggccctcaagc gtggcatcga gaaggctgtc 180
gaggctgtca cccagtcgct gctgaagtcg gcccaaggagg tcgagaccaa ggagcagatt 240
tctgccaccg cggcgatctc cgccggcgac acccagatcg gcgagctcat cgccgaggcc 300
atggacaagg tcggcaacga ggggtgtcatc accgtcgagg agtcgaacac cttcggcctg 360

<210> 80
<211> 120
<212> PRT
<213> Mycobacterium vaccae

<400> 80

10051643-011302

Pro Tyr Glu Lys Ile Gly Ala Glu Leu Val Lys Glu Val Ala Lys Lys
 1 5 10 15
 Thr Asp Asp Val Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala
 20 25 30
 Gln Ala Leu Val Arg Glu Gly Leu Arg Asn Val Ala Ala Gly Ala Asn
 35 40 45
 Pro Leu Gly Leu Lys Arg Gly Ile Glu Lys Ala Val Glu Ala Val Thr
 50 55 60
 Gln Ser Leu Leu Lys Ser Ala Lys Glu Val Glu Thr Lys Glu Gln Ile
 65 70 75 80
 Ser Ala Thr Ala Ala Ile Ser Ala Gly Asp Thr Gln Ile Gly Glu Leu
 85 90 95
 Ile Ala Glu Ala Met Asp Lys Val Gly Asn Glu Gly Val Ile Thr Val
 100 105 110
 Glu Glu Ser Asn Thr Phe Gly Leu
 115 120

<210> 81
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 81
 actgacgctg aggagcgaaa gcgtggggag cgaacaggat tag 43

<210> 82
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 82
 cgacaaggaa cttcgctacc ttaggaccgt catagttacg ggc 43

<210> 83
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 83
 aaaaaaaaaa aaaaaaaaaa 20

<210> 84
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 84
ggaaggaagc ggccgctttt tttttttttt t 31

<210> 85
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 85
gagagagagc ccgggcatgc tscttsctst s 31

<210> 86
<211> 238
<212> DNA
<213> Mycobacterium vaccae

<400> 86
ctcgatgaac cgctcggagc gctcgacctg aagctgcgcc acgtcatgca gttcgagctc 60
aagcgcattc agcgggaggt cgggatcacg ttcattctacg tgaccacga ccaggaagag 120
gcgctcacga tgagtgcacg catcgcggtg atgaacgccg gcaacgctga acagatcggc 180
agcccgaccg agatctacga ccgtcccgcg acggtgttcg tcgccagctt catcgaat 238

<210> 87
<211> 79
<212> PRT
<213> Mycobacterium vaccae

<400> 87
Leu Asp Glu Pro Leu Gly Ala Leu Asp Leu Lys Leu Arg His Val Met
1 5 10 15
Gln Phe Glu Leu Lys Arg Ile Gln Arg Glu Val Gly Ile Thr Phe Ile
20 25 30
Tyr Val Thr His Asp Gln Glu Glu Ala Leu Thr Met Ser Asp Arg Ile
35 40 45
Ala Val Met Asn Ala Gly Asn Val Glu Gln Ile Gly Ser Pro Thr Glu
50 55 60
Ile Tyr Asp Arg Pro Ala Thr Val Phe Val Ala Ser Phe Ile Glu
65 70 75

<210> 88
<211> 1518
<212> DNA
<213> Mycobacterium vaccae

<400> 88
cactcgccat ggggtgttaca ataccccacc agttcctcga agtaaaccgaa cagaaccgtg 60
acatccagct gagaaaatat tcacagcgac gaagcccggc cgatgcctga tgggggtccg 120
catcagtaca gcgcgctttc ctgcgcggat tctattgtcg agtccggggg gtgacgaagg 180
aatccattgt cgaaatgtaa attcgttgcg gaatcatttg catagggtccg tcagatccgc 240
gaagggtttac cccacagcca cgacggctgt ccccaggag gacctgccct gaccggcaca 300
cacatcaccg ctgcagaacc tgcagaacag acggcggtatt ccgcggcacc gcccgaaggc 360
gcgcgggtga tcgagatcga ccatgtcacg aagcgcttcg gcgactacct ggccgtcgcg 420
gacgcagact tctccatcgc gcccggggag ttctttctca tgctcgggcc gtccgggtgt 480

```

gggaagacga ccacgttgcg catgatcgcg ggattcgaga ccccgactga aggggcgatc 540
cgctcgaag ggcgcgacgt gtcgaggacc ccaccaaca agcgcaacgt caacacgggtg 600
ttccagcact acgcgctgtt cccgcacatg acggtctggg acaacgtcgc gtacggcccg 660
cgagcaaga aactcggcaa aggcgaggtc cgcaagcgcg tcgacgagct gctggagatc 720
gtccggctga ccgaatttgc cgagcgagcg cccgcccagc tgtccggcgg gcagcagcag 780
cggttggtcg tggcccgggc actggtgaac taccacagcg cgctgctgct cgatgaaccg 840
ctcggagcgc tcgacctgaa gctgcgccac gtcacgagct tcgagctcaa gcgcatccag 900
cgggaggtcg ggatcacgtt catctacgtg acccagcacc aggaagaggc gctcacgatg 960
agtgaccgca tcgcggtgat gaacgcgggc aacgtcgaac agatcggcag cccgaccgag 1020
atctacgacc gtcccgcgac ggtgttcgtc gccagcttca tcggacaggc caacctctgg 1080
gcgggccggg gcaccggccg ctccaaccgc gattacgtcg agatcgacgt tctcggctcg 1140
acgctgaagg cacgcccggg cgagaccacg atcgagcccg gcgggcacgc caccctgatg 1200
gtgctccgg aacgcatccg ggtcaccgcc ggctcccagg acgcgccgac cggtgacgtc 1260
gctgctgctc gtgccaccgt caccgacctg accttccaag gtccgggtgg gcggctctcg 1320
ctggccgctc cggacgactc gaccgtgacg gccacgctcg gcccagagca ggatctgccc 1380
ctgtgctgac ccggcgagca cgtgtacgtc agctgggcac cggaagcctc cctggtgctt 1440
cccggcgacg acatccccac caccgaggac ctcaagaga tgctcgacga ctctgagtc 1500
acgcttcccg attgccga 1518

```

```

<210> 89
<211> 376
<212> PRT
<213> Mycobacterium vaccae

```

```

<400> 89
Val Ile Glu Ile Asp His Val Thr Lys Arg Phe Gly Asp Tyr Leu Ala
1 5 10 15
Val Ala Asp Ala Asp Phe Ser Ile Ala Pro Gly Glu Phe Phe Ser Met
20 25 30
Leu Gly Pro Ser Gly Cys Gly Lys Thr Thr Thr Leu Arg Met Ile Ala
35 40 45
Gly Phe Glu Thr Pro Thr Glu Gly Ala Ile Arg Leu Glu Gly Ala Asp
50 55 60
Val Ser Arg Thr Pro Pro Asn Lys Arg Asn Val Asn Thr Val Phe Gln
65 70 75 80
His Tyr Ala Leu Phe Pro His Met Thr Val Trp Asp Asn Val Ala Tyr
85 90 95
Gly Pro Arg Ser Lys Lys Leu Gly Lys Gly Glu Val Arg Lys Arg Val
100 105 110
Asp Glu Leu Leu Glu Ile Val Arg Leu Thr Glu Phe Ala Glu Arg Arg
115 120 125
Pro Ala Gln Leu Ser Gly Gly Gln Gln Gln Arg Val Ala Leu Ala Arg
130 135 140
Ala Leu Val Asn Tyr Pro Ser Ala Leu Leu Leu Asp Glu Pro Leu Gly
145 150 155 160
Ala Leu Asp Leu Lys Leu Arg His Val Met Gln Phe Glu Leu Lys Arg
165 170 175
Ile Gln Arg Glu Val Gly Ile Thr Phe Ile Tyr Val Thr His Asp Gln
180 185 190
Glu Glu Ala Leu Thr Met Ser Asp Arg Ile Ala Val Met Asn Ala Gly
195 200 205
Asn Val Glu Gln Ile Gly Ser Pro Thr Glu Ile Tyr Asp Arg Pro Ala
210 215 220
Thr Val Phe Val Ala Ser Phe Ile Gly Gln Ala Asn Leu Trp Ala Gly
225 230 235 240
Arg Cys Thr Gly Arg Ser Asn Arg Asp Tyr Val Glu Ile Asp Val Leu
245 250 255

```

Gly Ser Thr Leu Lys Ala Arg Pro Gly Glu Thr Thr Ile Glu Pro Gly
260 265 270
Gly His Ala Thr Leu Met Val Arg Pro Glu Arg Ile Arg Val Thr Pro
275 280 285
Gly Ser Gln Asp Ala Pro Thr Gly Asp Val Ala Cys Val Arg Ala Thr
290 295 300
Val Thr Asp Leu Thr Phe Gln Gly Pro Val Val Arg Leu Ser Leu Ala
305 310 315 320
Ala Pro Asp Asp Ser Thr Val Ile Ala His Val Gly Pro Glu Gln Asp
325 330 335
Leu Pro Leu Leu Arg Pro Gly Asp Asp Val Tyr Val Ser Trp Ala Pro
340 345 350
Glu Ala Ser Leu Val Leu Pro Gly Asp Asp Ile Pro Thr Thr Glu Asp
355 360 365
Leu Glu Glu Met Leu Asp Asp Ser
370 375

<210> 90
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 90
gagagactcg aggtgatcga gatcgaccat gtc 33

<210> 91
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 91
agagactcga gcaatcggga agcgtgactc a 31

<210> 92
<211> 323
<212> DNA
<213> Mycobacterium vaccae

<400> 92
gtcgactaca aagaagactt caacgacaac gagcagtggg tcgccaaagg caaggagccg 60
ttgtcgcgca agcaggacat aggcgcgcgac ctggtgatcc ccaccgagtt catggccgcg 120
cgcgtcaagg gcctgggatg gctcaatgag atcagcgaag ccggcgtgcc caatcgcaag 180
aatctgcgtc aggacctgtt ggactcgagc atcgacgagg gccgcaagtt caccgcgccg 240
tacatgaccg gcatggtcgg tctcgctac aacaaggcag ccaccggacg cgatatccgc 300
accatcgacg acctctggga tcc 323

<210> 93
<211> 1341
<212> DNA
<213> Mycobacterium vaccae

<400> 93

ccccaccccc	ttccctggag	ccgacgaaag	gcacccgcac	atgtcccgtg	acatcgatcc	60
ccacctgctg	gcccgaaatga	ccgcacgcgc	caccttgctg	cgccgcttca	tcggcggtgg	120
cgccgcggcc	gccgcggggc	tgaccctcgg	ttcgtcgttc	ctggcggtcg	gcgggtccga	180
cagtgggacc	tcgagcacca	cgtcacagga	cagcggtccc	gccagcggtg	ccctgcgcgt	240
ctccaactgg	ccgtctata	tggccgacgg	tttcatcgca	gcgttccaga	ccgcctcggg	300
catcacggtc	gactacaaa	aagacttcaa	cgacaacgag	cagtgggttc	ccaaggtcaa	360
ggagccgttg	tcgcgcaagc	aggacatagg	cgccgacctg	gtgatcccca	ccgagttcat	420
ggccgcgcgc	gtcaagggcc	tgggatgggt	caatgagatc	agcgaagccg	gcgtgcccac	480
tcgcaagaat	ctgcgtcagg	acctggttga	ctcgagcatc	gacgagggcc	gcaagttcac	540
cgcccgctac	atgaccggca	tggtcggtct	cgcctacaac	aaggcagcca	ccggacgcga	600
tatccgcacc	atcgacgacc	tctgggatcc	cgcgttcaag	ggccgcgtca	gtctgttctc	660
cgacgtccag	gacggcctcg	gcatgatcat	gctctcgcag	ggcaactcgc	cggagaatcc	720
gaccaccgag	tccattcagc	aggcggtcga	tctgggtccg	gaacagaacg	acaggggggtc	780
agatccgtcg	cttcaccggc	aacgactacg	ccgacgacct	ggccgcagaa	acatcgccat	840
cgcgcaggcg	tactccgggtg	acgtcgtgca	gctgcaggcg	gacaaccccg	atctgcagtt	900
catcgttccc	gaatccggcg	gcgactgggt	cgtcgacacg	atgggtgatcc	cgtacaccac	960
gcagaaccag	aaggccggcg	aggcgtggat	cgactacatc	tacgaccgag	ccaactacgc	1020
caagctgggtc	gcgttcaccc	agttcgtgcc	cgcactctcg	gacatgaccg	acgaactcgc	1080
caaggtcgat	cctgcatcgg	cggagaaccc	gctgatcaac	ccgtcggccg	aggtgcaggc	1140
gaacctgaag	tcgtggggcg	cactgaccga	cgagcagacg	caggagttca	acactgcgta	1200
cgccgccgtc	accggcggtc	gacgcggtgg	tagtgccgat	gcgaggggca	taaattggccc	1260
tgcggacgcg	aggagcataa	atggccgggtg	tcgccaccag	cagccgtcag	cggacaaggt	1320
cgctccgtat	ctgatgggtcc	t				1341

<210> 94

<211> 393

<212> PRT

<213> Mycobacterium vaccae

<400> 94

Met	Ser	Arg	Asp	Ile	Asp	Pro	His	Leu	Leu	Ala	Arg	Met	Thr	Ala	Arg
1				5				10						15	
Arg	Thr	Leu	Arg	Arg	Phe	Ile	Gly	Gly	Ala	Ala	Ala	Ala	Ala	Ala	
		20					25						30		
Gly	Leu	Thr	Leu	Gly	Ser	Ser	Phe	Leu	Ala	Ala	Cys	Gly	Ser	Asp	Ser
		35					40					45			
Gly	Thr	Ser	Ser	Thr	Thr	Ser	Gln	Asp	Ser	Gly	Pro	Ala	Ser	Gly	Ala
		50					55				60				
Leu	Arg	Val	Ser	Asn	Trp	Pro	Leu	Tyr	Met	Ala	Asp	Gly	Phe	Ile	Ala
65				70					75					80	
Ala	Phe	Gln	Thr	Ala	Ser	Gly	Ile	Thr	Val	Asp	Tyr	Lys	Glu	Asp	Phe
				85					90					95	
Asn	Asp	Asn	Glu	Gln	Trp	Phe	Ala	Lys	Val	Lys	Glu	Pro	Leu	Ser	Arg
			100					105					110		
Lys	Gln	Asp	Ile	Gly	Ala	Asp	Leu	Val	Ile	Pro	Thr	Glu	Phe	Met	Ala
		115					120					125			
Ala	Arg	Val	Lys	Gly	Leu	Gly	Trp	Leu	Asn	Glu	Ile	Ser	Glu	Ala	Gly
		130					135					140			
Val	Pro	Asn	Arg	Lys	Asn	Leu	Arg	Gln	Asp	Leu	Leu	Asp	Ser	Ser	Ile
145				150					155					160	
Asp	Glu	Gly	Arg	Lys	Phe	Thr	Ala	Pro	Tyr	Met	Thr	Gly	Met	Val	Gly
				165					170					175	
Leu	Ala	Tyr	Asn	Lys	Ala	Ala	Thr	Gly	Arg	Asp	Ile	Arg	Thr	Ile	Asp
			180					185					190		
Asp	Leu	Trp	Asp	Pro	Ala	Phe	Lys	Gly	Arg	Val	Ser	Leu	Phe	Ser	Asp
		195					200					205			

Val Gln Asp Gly Leu Gly Met Ile Met Leu Ser Gln Gly Asn Ser Pro
 210 215 220
 Glu Asn Pro Thr Thr Glu Ser Ile Gln Gln Ala Val Asp Leu Val Arg
 225 230 235 240
 Glu Gln Asn Asp Arg Gly Ser Asp Pro Ser Leu His Arg Gln Arg Leu
 245 250 255
 Arg Arg Arg Pro Gly Arg Arg Asn Ile Ala Ile Ala Gln Ala Tyr Ser
 260 265 270
 Gly Asp Val Val Gln Leu Gln Ala Asp Asn Pro Asp Leu Gln Phe Ile
 275 280 285
 Val Pro Glu Ser Gly Gly Asp Trp Phe Val Asp Thr Met Val Ile Pro
 290 295 300
 Tyr Thr Thr Gln Asn Gln Lys Ala Ala Glu Ala Trp Ile Asp Tyr Ile
 305 310 315 320
 Tyr Asp Arg Ala Asn Tyr Ala Lys Leu Val Ala Phe Thr Gln Phe Val
 325 330 335
 Pro Ala Leu Ser Asp Met Thr Asp Glu Leu Ala Lys Val Asp Pro Ala
 340 345 350
 Ser Ala Glu Asn Pro Leu Ile Asn Pro Ser Ala Glu Val Gln Ala Asn
 355 360 365
 Leu Lys Ser Trp Ala Ala Leu Thr Asp Glu Gln Thr Gln Glu Phe Asn
 370 375 380
 Thr Ala Tyr Ala Ala Val Thr Gly Gly
 385 390

<210> 95
 <211> 22
 <212> DNA
 <213> Mycobacterium vaccae

<400> 95
 atgtcccgtg acatcgatcc cc 22

<210> 96
 <211> 21
 <212> DNA
 <213> Mycobacterium vaccae

<400> 96
 atcggcacta ccaccgcgtc a 21

<210> 97
 <211> 861
 <212> DNA
 <213> Mycobacterium vaccae

<400> 97
 gccggcgctc gcatatctcg cgatcttctt ccgtgggtgcc gttcttctcg ctggcacgca 60
 cctcgttgctc ggagaccggc ggctcggtgt tcatgccgac gctgacgttc gcctgggact 120
 tcggcaacta cgtcgacgcg ttacgatgt accacgagca gatcttccgc tcgttcggct 180
 acgcgttcgt cgccacggtg ctgtgcctgt tgctggcggt cccgctggcc tacgtcatcg 240
 cgttcaaggc cggccgggtc aagaacctga tcttggggct ggtgatcctg ccgttcttcg 300
 tcacgttcct gatccgcacc attgcgtgga agacgatcct ggccgacgaa ggctgggtgg 360
 tcaccgcgtc gggcgccatc gggctgctgc ctgacgaggg cgggctgctg tccaccagct 420
 gggcggtcat cggcggtctg acctacaact ggatcatctt catgatcctg ccgctgtacg 480
 tcagcctgga gaagatcgac ccgcgtctgc tggaggctc ccaggacctc tactcgtcgg 540
 cgccgcgcag cttcggcaag gtgatcctgc cgatggcgat gcccggggtg ctggccggga 600

gcatgctggt gttcatcccg gccgtcggcg acttcatcaa cgccgactat ctccggcagta 660
cccagaccac catgatcggc aacgtgatcc agaagcagtt cctggtcgtc aaggactatc 720
cggcggcggc cgcgctgagt ctggggctga tgttgctgat cctgatcggc gtgctcctct 780
acacacgggc gctgggttcg gaggatctgg tatgaccacc caggcaggcg ccgcactggc 840
caccgccgcc cagcaggatc c 861

<210> 98
<211> 259
<212> PRT
<213> Mycobacterium vaccae

<400> 98

Val Val Pro Phe Phe Ser Leu Ala Arg Thr Ser Leu Ser Glu Thr Gly
1 5 10 15
Gly Ser Val Phe Met Pro Thr Leu Thr Phe Ala Trp Asp Phe Gly Asn
20 25 30
Tyr Val Asp Ala Phe Thr Met Tyr His Glu Gln Ile Phe Arg Ser Phe
35 40 45
Gly Tyr Ala Phe Val Ala Thr Val Leu Cys Leu Leu Leu Ala Phe Pro
50 55 60
Leu Ala Tyr Val Ile Ala Phe Lys Ala Gly Arg Phe Lys Asn Leu Ile
65 70 75 80
Leu Gly Leu Val Ile Leu Pro Phe Phe Val Thr Phe Leu Ile Arg Thr
85 90 95
Ile Ala Trp Thr Ile Leu Ala Asp Glu Gly Trp Val Val Thr Ala Leu
100 105 110
Gly Ala Ile Gly Leu Leu Pro Asp Glu Gly Arg Leu Leu Ser Thr Ser
115 120 125
Trp Ala Val Ile Gly Gly Leu Thr Tyr Asn Trp Ile Ile Phe Met Ile
130 135 140
Leu Pro Leu Tyr Val Ser Leu Glu Lys Ile Asp Pro Arg Leu Leu Glu
145 150 155 160
Ala Ser Gln Asp Leu Tyr Ser Ser Ala Pro Arg Ser Phe Gly Lys Val
165 170 175
Ile Leu Pro Met Ala Met Pro Gly Val Leu Ala Gly Ser Met Leu Val
180 185 190
Phe Ile Pro Ala Val Gly Asp Phe Ile Asn Ala Asp Tyr Leu Gly Ser
195 200 205
Thr Gln Thr Thr Met Ile Gly Asn Val Ile Gln Lys Gln Phe Leu Val
210 215 220
Val Lys Asp Tyr Pro Ala Ala Ala Ala Leu Ser Leu Gly Leu Met Leu
225 230 235 240
Leu Ile Leu Ile Gly Val Leu Leu Tyr Thr Arg Ala Leu Gly Ser Glu
245 250 255
Asp Leu Val

<210> 99
<211> 277
<212> DNA
<213> Mycobacterium vaccae

<400> 99

gtaatctttg ctggagcccg tacgccggtg ggcaaaactca tgggttcgct caaggacttc 60
aagggcagcg atctcgggtg cgtggcgatc aagggcgccc tggagaaagc cttccccggc 120
gtcgacgacc ctgctcgtct cgtcgagtac gtgatcatgg gccaaagtgt ctccgccggc 180
gccggccaga tgcccggccc ccaggccgcc gtcgccgccg gcatcccggtg ggacgtcgcc 240

10051643.01.1302

tcgctgacga tcaacaagat gtgcctgtcg ggcacgcg

277

<210> 100
<211> 92
<212> PRT
<213> Mycobacterium vaccae

<400> 100
Val Ile Phe Ala Gly Ala Arg Thr Pro Val Gly Lys Leu Met Gly Ser
1 5 10 15
Leu Lys Asp Phe Lys Gly Ser Asp Leu Gly Ala Val Ala Ile Lys Gly
20 25 30
Ala Leu Glu Lys Ala Phe Pro Gly Val Asp Asp Pro Ala Arg Leu Val
35 40 45
Glu Tyr Val Ile Met Gly Gln Val Leu Ser Ala Gly Ala Gly Gln Met
50 55 60
Pro Ala Arg Gln Ala Ala Val Ala Ala Gly Ile Pro Trp Asp Val Ala
65 70 75 80
Ser Leu Thr Ile Asn Lys Met Cys Leu Ser Gly Ile
85 90

<210> 101
<211> 12
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (1)...(1)
<223> Residue can be either Glu or Pro

<221> UNSURE
<222> (2)...(2)
<223> Residue can be either Pro or Glu

<221> UNSURE
<222> (7)...(7)

<221> UNSURE
<222> (12)...(12)

<400> 101
Xaa Xaa Ala Asp Arg Gly Xaa Ser Lys Tyr Arg Xaa
1 5 10

<210> 102
<211> 24
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (1)...(1)

<400> 102
Xaa Ile Asp Glu Ser Leu Phe Asp Ala Glu Glu Lys Met Glu Lys Ala
1 5 10 15

10051543-011902

Val Ser Val Ala Arg Asp Ser Ala
20

<210> 103
<211> 23
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (1)...(2)

<221> UNSURE
<222> (15)...(15)

<221> UNSURE
<222> (17)...(17)

<400> 103

Xaa Xaa Ile Ala Pro Ala Thr Ser Gly Thr Leu Ser Glu Phe Xaa Ala
1 5 10 15
Xaa Lys Gly Val Thr Met Glu
20

<210> 104
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<400> 104

Pro Asn Val Pro Asp Ala Phe Ala Val Leu Ala Asp Arg Val Gly
1 5 10 15

<210> 105
<211> 9
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (1)...(1)

<400> 105

Xaa Ile Arg Val Gly Val Asn Gly Phe
1 5

<210> 106
<211> 485
<212> DNA
<213> Mycobacterium vaccae

<400> 106

agcggctggg	acatcaacac	cgccgccttc	gagtggtacg	tcgactcggg	tctcgcggtg	60
atcatgcccg	tcggcgggca	gtccagcttc	tacagcgact	ggtacagccc	ggcctgcggt	120
aaggccgggt	gccagacctt	caagtgggag	acgttcctga	cccaggagct	gccggcctac	180
ctcgccgcca	acaagggggt	cgacccgaac	cgcaacgcgg	ccgtcgggtc	gtccatggcc	240
ggttcggcgg	cgctgacgct	ggcgatctac	cacccgcagc	agttccagta	cgccgggtcg	300

```
ctgtcgggct acctgaaccc gtccgagggg tgggtggcga tgctgatcaa catctcgatg 360
gggtgacgcgg gcggtctacaa ggccaacgac atgtgggggc gcaccgagga cccgagcagc 420
gcctggaagc gcaacgaccc gatggtcaac atcgggaagc tggtcgcaa caacaccccc 480
ctctc 485
```

<210> 107
<211> 501
<212> DNA
<213> Mycobacterium vaccae

<220>
<221> unsure
<222> (441)...(441)

<221> unsure
<222> (450)...(450)

```
<400> 107
atgccggtgc gacgtgcgcg cagtgcgctt gcgtccgtga ccttcgtcgc ggccgcgtgc 60
gtgggcgctg agggcaccgc actggcggcg acgccggact ggagcgggcg ctacacggtg 120
gtgacgttcg cctccgacaa actcggcaag agtgtggcgg cccgccagcc agaaccgcgac 180
ttcagcggtc agtacacctt cagcaagtcg tgtgtgggca cctgcgtggc caccgcgtcc 240
gacggcccgg cgccgtcgaa cccgacgatt ccgcagcccg cgcgctacac ctgggacggc 300
aggcagtggg tgttcaacta caactggcag tgggagtgtc tccgcggcgc cgacgtcccg 360
cgcgagtacg ccgcccgcgc ttcgctgggtg ttctacgccc cgaccgccga cgggtcgatg 420
ttcggcacct ggcgaccga natcctggan ggcctctgca agggcaccgt gatcatgccg 480
gtcgcggcct atccggcgta g 501
```

<210> 108
<211> 180
<212> DNA
<213> Mycobacterium vaccae

```
<400> 108
atgaaccagc cgcggcccga ggccgagggc aacctgcggg gctacttcac cgccaacccg 60
gcggagtact acgacctgcg gggcatcctc gccccgatcg gtgacgcgca gcgcaactgc 120
aacatcaccg tgctgccggt agagctgcag acggcctacg acacgttcat ggccggctga 180
```

<210> 109
<211> 166
<212> PRT
<213> Mycobacterium vaccae

```
<400> 109
Met Pro Val Arg Arg Ala Arg Ser Ala Leu Ala Ser Val Thr Phe Val
1 5 10 15
Ala Ala Ala Cys Val Gly Ala Glu Gly Thr Ala Leu Ala Ala Thr Pro
20 25 30
Asp Trp Ser Gly Arg Tyr Thr Val Thr Phe Ala Ser Asp Lys Leu
35 40 45
Gly Thr Ser Val Ala Ala Arg Gln Pro Glu Pro Asp Phe Ser Gly Gln
50 55 60
Tyr Thr Phe Ser Thr Ser Cys Val Gly Thr Cys Val Ala Thr Ala Ser
65 70 75 80
Asp Gly Pro Ala Pro Ser Asn Pro Thr Ile Pro Gln Pro Ala Arg Tyr
85 90 95
Thr Trp Asp Gly Arg Gln Trp Val Phe Asn Tyr Asn Trp Gln Trp Glu
```

100 105 110
 Cys Phe Arg Gly Ala Asp Val Pro Arg Glu Tyr Ala Ala Ala Arg Ser
 115 120 125
 Leu Val Phe Tyr Ala Pro Thr Ala Asp Gly Ser Met Phe Gly Thr Trp
 130 135 140
 Arg Thr Asp Ile Leu Asp Gly Leu Cys Lys Gly Thr Val Ile Met Pro
 145 150 155 160
 Val Ala Ala Tyr Pro Ala
 165

<210> 110
 <211> 74
 <212> PRT
 <213> Mycobacterium vaccae

<400> 110
 Pro Arg Asp Thr His Pro Gly Ala Asn Gln Ala Val Thr Ala Ala Met
 1 5 10 15
 Asn Gln Pro Arg Pro Glu Ala Glu Ala Asn Leu Arg Gly Tyr Phe Thr
 20 25 30
 Ala Asn Pro Ala Glu Tyr Tyr Asp Leu Arg Gly Ile Leu Ala Pro Ile
 35 40 45
 Gly Asp Ala Gln Arg Asn Cys Asn Ile Thr Val Leu Pro Val Glu Leu
 50 55 60
 Gln Thr Ala Tyr Asp Thr Phe Met Ala Gly
 65 70

<210> 111
 <211> 503
 <212> DNA
 <213> Mycobacterium vaccae

<220>
 <221> unsure
 <222> (358)...(358)

<400> 111
 atgcaggtgc ggctgttct gggcagtgct ggtgcagcag tcgcggtttc ggccgcgtta 60
 tggcagacgg gggtttcgat accgaccgcc tcagcggatc cgtgtccgga catcgaggtg 120
 atcttcgcgc gcgggaccgg tgcggaaccc ggctcgggt gggtcggtga tgcgttcgctc 180
 aacgcgctgc ggcccaaggt cggtgagcag tcggtgggca cctacgcggt gaactaccgc 240
 gcaggattcg gacttcgaca aatcggcgcc catgggcgcg gccgacgcat cggggcgggt 300
 gcagtggatg gccgacaact gcccgacac caagcttgct ctgggcggca tgcgcangg 360
 cgccggcgctc atcgacctga tcaccgtcga tccgcgaccg ctgggcccgt tcacccccac 420
 cccgatgccg ccccgctcg ccgaccacgt ggccgcgctt gtggtcttcg gaaatccgtt 480
 gcgcgacatc cgtggtggcg gtc 503

<210> 112
 <211> 167
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (119)...(119)

<400> 112

Met Gln Val Arg Arg Val Leu Gly Ser Val Gly Ala Ala Val Ala Val
 1 5 10 15
 Ser Ala Ala Leu Trp Gln Thr Gly Val Ser Ile Pro Thr Ala Ser Ala
 20 25 30
 Asp Pro Cys Pro Asp Ile Glu Val Ile Phe Ala Arg Gly Thr Gly Ala
 35 40 45
 Glu Pro Gly Leu Gly Trp Val Gly Asp Ala Phe Val Asn Ala Leu Arg
 50 55 60
 Pro Lys Val Gly Glu Gln Ser Val Gly Thr Tyr Ala Val Asn Tyr Pro
 65 70 75 80
 Ala Gly Phe Asp Phe Asp Lys Ser Ala Pro Met Gly Ala Ala Asp Ala
 85 90 95
 Ser Gly Arg Val Gln Trp Met Ala Asp Asn Cys Pro Asp Thr Lys Leu
 100 105 110
 Val Leu Gly Gly Met Ser Xaa Gly Ala Gly Val Ile Asp Leu Ile Thr
 115 120 125
 Val Asp Pro Arg Pro Leu Gly Arg Phe Thr Pro Thr Pro Met Pro Pro
 130 135 140
 Arg Val Ala Asp His Val Ala Ala Val Val Val Phe Gly Asn Pro Leu
 145 150 155 160
 Arg Asp Ile Arg Gly Gly Gly
 165

<210> 113
 <211> 1569
 <212> DNA
 <213> Mycobacterium vaccae

<400> 113

atggccaaga	caattg	cgta	tgacgaagag	gccccgcgtg	gcctcgagcg	gggcctcaac	60
gccctcgag	acgccgtaaa	ggtgacgttg	ggcccgagg	gtcgcaacgt	cgtgctggag	120	
aagaagtggg	gcgccccac	gatcaccaac	gatggtgtgt	ccatcgccaa	ggagatcgag	180	
ctggaggacc	cgtacgagaa	gatcggcgt	gagctggtca	aagaggtcgc	caagaagacc	240	
gacgacgtcg	cgggcgacgg	caccaccacc	gccaccgtgc	tcgtcaggc	tctggttcgc	300	
gaaggcctgc	gcaacgtcgc	agccggcgcc	aaccgcgtcg	gcctcaagcg	tggcatcgag	360	
aaggctgtcg	aggctgtcac	ccagtcgctg	ctgaagtcgg	ccaaggaggt	cgagaccaag	420	
gagcagattt	ctgccaccgc	ggcgatttcc	gcggcgaca	cccagatcg	cgagctcatc	480	
gccgaggcca	tggacaaggt	cggaacagag	ggtgtcatca	ccgtcgagga	gtcgaacacc	540	
ttcggcctgc	agctcgagct	caccgagggg	atgcgttcg	acaagggcta	catctcgggt	600	
tacttcgtga	ccgacgccga	gcgccaggaa	gccgtcctgg	aggatcccta	catcctgctg	660	
gtcagctcca	aggtgtcgac	cgtcaaggat	ctgctccgc	tgctggagaa	ggatcatccag	720	
gccggcaagc	cgctgctgat	catcgccgag	gacgtcgagg	gcgaggccct	gtccacgctg	780	
gtggtcaaca	agatccgcgg	caccttcaag	tccgtcgccg	tcaaggctcc	gggcttcggg	840	
gaccgccgca	aggcgatgct	gcaggacatg	gccatcctca	ccggtggtca	ggtcgtcagc	900	
gaaagagtcg	ggctgtccct	ggagaccgcc	gacgtctcgc	tgctgggcca	ggcccgaag	960	
gtcgtcgtca	ccaaggacga	gaccaccatc	gtcgaggggt	cgggcgattc	cgatgccatc	1020	
gccggccggg	tggctcagat	ccgcgccgag	atcgagaaca	gcgactccga	ctacgaccgc	1080	
gagaagctgc	aggagcgct	ggccaagctg	gccggcggtg	ttgcggtgat	caaggccgga	1140	
gctgccaccg	aggtggagct	caaggagcgc	aagcaccgca	tcgaggacgc	cgtccgcaac	1200	
gcgaaggctg	ccgtcgaaga	gggcatcgtc	gccggtggcg	gcgtggctct	gctgcagtcg	1260	
gctcctgcgc	tggacgacct	cggcctgacg	ggcgacgagg	ccaccggtgc	caacatcgtc	1320	
cgcgtggcgc	tgtcggtccc	gctcaagcag	atcgcttca	acggcggcct	ggagcccggc	1380	
gtcgttgccg	agaaggtgtc	caacctgccc	gcgggtcacg	gcctcaacgc	cgcgaccggt	1440	
gagtacgagg	acctgtctaa	ggccggcgctc	gccgaccggg	tgaaggtcac	ccgctcggcg	1500	
ctgcagaacg	cggcgctccat	cgcggtctctg	ttcctcacca	ccgaggccgt	cgtcgccgac	1560	
aagccggag						1569	

<210> 114
 <211> 523
 <212> PRT
 <213> Mycobacterium vaccae

<400> 114

Met	Ala	Lys	Thr	Ile	Ala	Tyr	Asp	Glu	Glu	Ala	Arg	Arg	Gly	Leu	Glu
1				5				10						15	
Arg	Gly	Leu	Asn	Ala	Leu	Ala	Asp	Ala	Val	Lys	Val	Thr	Leu	Gly	Pro
			20					25					30		
Lys	Gly	Arg	Asn	Val	Val	Leu	Glu	Lys	Lys	Trp	Gly	Ala	Pro	Thr	Ile
		35					40					45			
Thr	Asn	Asp	Gly	Val	Ser	Ile	Ala	Lys	Glu	Ile	Glu	Leu	Glu	Asp	Pro
	50					55					60				
Tyr	Glu	Lys	Ile	Gly	Ala	Glu	Leu	Val	Lys	Glu	Val	Ala	Lys	Lys	Thr
65					70					75					80
Asp	Asp	Val	Ala	Gly	Asp	Gly	Thr	Thr	Thr	Ala	Thr	Val	Leu	Ala	Gln
				85					90					95	
Ala	Leu	Val	Arg	Glu	Gly	Leu	Arg	Asn	Val	Ala	Ala	Gly	Ala	Asn	Pro
			100					105					110		
Leu	Gly	Leu	Lys	Arg	Gly	Ile	Glu	Lys	Ala	Val	Glu	Ala	Val	Thr	Gln
		115					120					125			
Ser	Leu	Leu	Lys	Ser	Ala	Lys	Glu	Val	Glu	Thr	Lys	Glu	Gln	Ile	Ser
	130					135					140				
Ala	Thr	Ala	Ala	Ile	Ser	Ala	Gly	Asp	Thr	Gln	Ile	Gly	Glu	Leu	Ile
145					150					155					160
Ala	Glu	Ala	Met	Asp	Lys	Val	Gly	Asn	Glu	Gly	Val	Ile	Thr	Val	Glu
			165					170					175		
Glu	Ser	Asn	Thr	Phe	Gly	Leu	Gln	Leu	Glu	Leu	Thr	Glu	Gly	Met	Arg
		180					185					190			
Phe	Asp	Lys	Gly	Tyr	Ile	Ser	Gly	Tyr	Phe	Val	Thr	Asp	Ala	Glu	Arg
	195						200					205			
Gln	Glu	Ala	Val	Leu	Glu	Asp	Pro	Tyr	Ile	Leu	Leu	Val	Ser	Ser	Lys
	210					215					220				
Val	Ser	Thr	Val	Lys	Asp	Leu	Leu	Pro	Leu	Leu	Glu	Lys	Val	Ile	Gln
225					230					235					240
Ala	Gly	Lys	Pro	Leu	Leu	Ile	Ile	Ala	Glu	Asp	Val	Glu	Gly	Glu	Ala
			245						250					255	
Leu	Ser	Thr	Leu	Val	Val	Asn	Lys	Ile	Arg	Gly	Thr	Phe	Lys	Ser	Val
		260					265					270			
Ala	Val	Lys	Ala	Pro	Gly	Phe	Gly	Asp	Arg	Arg	Lys	Ala	Met	Leu	Gln
		275					280				285				
Asp	Met	Ala	Ile	Leu	Thr	Gly	Gly	Gln	Val	Val	Ser	Glu	Arg	Val	Gly
	290					295					300				
Leu	Ser	Leu	Glu	Thr	Ala	Asp	Val	Ser	Leu	Leu	Gly	Gln	Ala	Arg	Lys
305					310					315					320
Val	Val	Val	Thr	Lys	Asp	Glu	Thr	Thr	Ile	Val	Glu	Gly	Ser	Gly	Asp
			325						330					335	
Ser	Asp	Ala	Ile	Ala	Gly	Arg	Val	Ala	Gln	Ile	Arg	Ala	Glu	Ile	Glu
		340					345					350			
Asn	Ser	Asp	Ser	Asp	Tyr	Asp	Arg	Glu	Lys	Leu	Gln	Glu	Arg	Leu	Ala
		355				360					365				
Lys	Leu	Ala	Gly	Gly	Val	Ala	Val	Ile	Lys	Ala	Gly	Ala	Ala	Thr	Glu
	370					375					380				
Val	Glu	Leu	Lys	Glu	Arg	Lys	His	Arg	Ile	Glu	Asp	Ala	Val	Arg	Asn
385				390						395					400
Ala	Lys	Ala	Ala	Val	Glu	Glu	Gly	Ile	Val	Ala	Gly	Gly	Gly	Val	Ala

10051643.01.1302

405 410 415
 Leu Leu Gln Ser Ala Pro Ala Leu Asp Asp Leu Gly Leu Thr Gly Asp
 420 425 430
 Glu Ala Thr Gly Ala Asn Ile Val Arg Val Ala Leu Ser Ala Pro Leu
 435 440 445
 Lys Gln Ile Ala Phe Asn Gly Gly Leu Glu Pro Gly Val Val Ala Glu
 450 455 460
 Lys Val Ser Asn Leu Pro Ala Gly His Gly Leu Asn Ala Ala Thr Gly
 465 470 475 480
 Glu Tyr Glu Asp Leu Leu Lys Ala Gly Val Ala Asp Pro Val Lys Val
 485 490 495
 Thr Arg Ser Ala Leu Gln Asn Ala Ala Ser Ile Ala Ala Leu Phe Leu
 500 505 510
 Thr Thr Glu Ala Val Val Ala Asp Lys Pro Glu
 515 520

<210> 115
 <211> 647
 <212> DNA
 <213> Mycobacterium vaccae

<400> 115

atggccaaga	caattgcgta	tgaagaagag	gcccgcgctg	gcctcgagcg	gggcctcaac	60
gccctcgag	acgccgtaaa	ggtgacgttg	ggcccgaagg	gtcgcaacgt	cgctgctggag	120
aagaagtggg	gcgccccac	gatcaccaac	gatggtgtgt	ccatcgccaa	ggagatcgag	180
ctggaggacc	cgtacgagaa	gatcggcgt	gagctgggtca	aagaggtcgc	caagaagacc	240
gacgacgtcg	cgggcgacgg	caccaccacc	gccaccgtgc	tcgctcaggc	tctggttcgc	300
gaaggcctgc	gcaacgtcgc	agccggcgcc	aaccgcgtcg	gcctcaagcg	tggcatcgag	360
aaggctgtcg	aggctgtcac	ccagtcgctg	ctgaagtcgg	ccaaggaggt	cgagaccaag	420
gagcagattt	ctgccaccgc	ggcgatttcc	gccggcgaca	cccagatcgg	cgagctcatc	480
gccgaggcca	tggacaaggt	cggcaacgag	ggtgtcatca	ccgtcgagga	gtcgaacacc	540
ttcggcctgc	agctcgagct	caccgagggg	atgcgcttcg	acaaggggta	catctcgggt	600
tacttcgtga	ccgacgccga	gcgccaggaa	gccgtcctgg	aggatcc		647

<210> 116
 <211> 927
 <212> DNA
 <213> Mycobacterium vaccae

<400> 116

gatccctaca	tcctgctggt	cagctccaag	gtgtcgaccg	tcaaggatct	gctcccgcgtg	60
ctggagaagg	tcacccaggc	cggcaagccg	ctgctgatca	tcgccgagga	cgctcgagggc	120
gaggccctgt	ccacgctggt	ggtcaacaag	atccgcggca	ccttcaagtc	cgctcgccgtc	180
aaggctccgg	gcttcggtga	ccgccgcaag	gcgatgctgc	aggacatggc	catcctcacc	240
ggtggtcagg	tcgtcagcga	aagagtcggg	ctgtccctgg	agaccgccga	cgctctcgctg	300
ctgggccaag	cccgcgaagg	cgctcgtcacc	aaggacgaga	ccaccatcgt	cgaggggtcg	360
ggcgattccg	atgccatcgc	cggccgggtg	gctcagatcc	gcgccgagat	cgagaacagc	420
gactccgact	acgaccgcga	gaagctgcag	gagcgcctgg	ccaagctggc	cggcgggtgtt	480
gcggtgatca	aggccggagc	tgccaccgag	gtggagctca	aggagcgcaa	gcaccgcac	540
gaggacgccg	tccgcaacgc	gaaggctgcc	gtcgaagagg	gcatcgtcgc	cggtggcggc	600
gtggctctgc	tgcagtcggc	tcctgcgctg	gacgacctcg	gcctgacggg	cgacgagggc	660
accggtgcca	acatcgtccg	cgtggcgctg	tcggctccgc	tcaagcagat	cgccttcaac	720
ggcggcctgg	agcccggcgt	cgttgccgag	aaggtgtcca	acctgcccgc	gggtcacggc	780
ctcaacgccg	cgaccgggtga	gtacgaggac	ctgctcaagg	ccggcgtcgc	cgaccgggtg	840
aaggtcacc	gctcggcgct	gcagaacgcg	gcgtccatcg	cggctctgtt	cctcaccacc	900
gaggccgtcg	tcgccgacaa	gccggag				927

<210> 117
 <211> 215
 <212> PRT
 <213> Mycobacterium vaccae

<400> 117
 Met Ala Lys Thr Ile Ala Tyr Asp Glu Glu Ala Arg Arg Gly Leu Glu
 1 5 10 15
 Arg Gly Leu Asn Ala Leu Ala Asp Ala Val Lys Val Thr Leu Gly Pro
 20 25 30
 Lys Gly Arg Asn Val Val Leu Glu Lys Lys Trp Gly Ala Pro Thr Ile
 35 40 45
 Thr Asn Asp Gly Val Ser Ile Ala Lys Glu Ile Glu Leu Glu Asp Pro
 50 55 60
 Tyr Glu Lys Ile Gly Ala Glu Leu Val Lys Glu Val Ala Lys Lys Thr
 65 70 75 80
 Asp Asp Val Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala Gln
 85 90 95
 Ala Leu Val Arg Glu Gly Leu Arg Asn Val Ala Ala Gly Ala Asn Pro
 100 105 110
 Leu Gly Leu Lys Arg Gly Ile Glu Lys Ala Val Glu Ala Val Thr Gln
 115 120 125
 Ser Leu Leu Lys Ser Ala Lys Glu Val Glu Thr Lys Glu Gln Ile Ser
 130 135 140
 Ala Thr Ala Ala Ile Ser Ala Gly Asp Thr Gln Ile Gly Glu Leu Ile
 145 150 155 160
 Ala Glu Ala Met Asp Lys Val Gly Asn Glu Gly Val Ile Thr Val Glu
 165 170 175
 Glu Ser Asn Thr Phe Gly Leu Gln Leu Glu Leu Thr Glu Gly Met Arg
 180 185 190
 Phe Asp Lys Gly Tyr Ile Ser Gly Tyr Phe Val Thr Asp Ala Glu Arg
 195 200 205
 Gln Glu Ala Val Leu Glu Asp
 210 215

<210> 118
 <211> 309
 <212> PRT
 <213> Mycobacterium vaccae

<400> 118
 Asp Pro Tyr Ile Leu Leu Val Ser Ser Lys Val Ser Thr Val Lys Asp
 1 5 10 15
 Leu Leu Pro Leu Leu Glu Lys Val Ile Gln Ala Gly Lys Pro Leu Leu
 20 25 30
 Ile Ile Ala Glu Asp Val Glu Gly Glu Ala Leu Ser Thr Leu Val Val
 35 40 45
 Asn Lys Ile Arg Gly Thr Phe Lys Ser Val Ala Val Lys Ala Pro Gly
 50 55 60
 Phe Gly Asp Arg Arg Lys Ala Met Leu Gln Asp Met Ala Ile Leu Thr
 65 70 75 80
 Gly Gly Gln Val Val Ser Glu Arg Val Gly Leu Ser Leu Glu Thr Ala
 85 90 95
 Asp Val Ser Leu Leu Gly Gln Ala Arg Lys Val Val Val Thr Lys Asp
 100 105 110
 Glu Thr Thr Ile Val Glu Gly Ser Gly Asp Ser Asp Ala Ile Ala Gly
 115 120 125

Arg Val Ala Gln Ile Arg Ala Glu Ile Glu Asn Ser Asp Ser Asp Tyr
 130 135 140
 Asp Arg Glu Lys Leu Gln Glu Arg Leu Ala Lys Leu Ala Gly Gly Val
 145 150 155 160
 Ala Val Ile Lys Ala Gly Ala Ala Thr Glu Val Glu Leu Lys Glu Arg
 165 170 175
 Lys His Arg Ile Glu Asp Ala Val Arg Asn Ala Lys Ala Ala Val Glu
 180 185 190
 Glu Gly Ile Val Ala Gly Gly Gly Val Ala Leu Leu Gln Ser Ala Pro
 195 200 205
 Ala Leu Asp Asp Leu Gly Leu Thr Gly Asp Glu Ala Thr Gly Ala Asn
 210 215 220
 Ile Val Arg Val Ala Leu Ser Ala Pro Leu Lys Gln Ile Ala Phe Asn
 225 230 235 240
 Gly Gly Leu Glu Pro Gly Val Val Ala Glu Lys Val Ser Asn Leu Pro
 245 250 255
 Ala Gly His Gly Leu Asn Ala Ala Thr Gly Glu Tyr Glu Asp Leu Leu
 260 265 270
 Lys Ala Gly Val Ala Asp Pro Val Lys Val Thr Arg Ser Ala Leu Gln
 275 280 285
 Asn Ala Ala Ser Ile Ala Ala Leu Phe Leu Thr Thr Glu Ala Val Val
 290 295 300
 Ala Asp Lys Pro Glu
 305

<210> 119
 <211> 162
 <212> DNA
 <213> Mycobacterium vaccae

<400> 119
 ctcgtacagg cgacggagat ctccgacgac gccacgtcgg tacggttggt cgccaccctg 60
 ttcggcgctg tggtgttgac gttggtgctg tccgggctca acgccaccct catccagggc 120
 gcaccagaag acagctggcg caggcggatt ccgtcgatct tc 162

<210> 120
 <211> 1366
 <212> DNA
 <213> Mycobacterium vaccae

<220>
 <221> unsure
 <222> (955)...(955)

<221> unsure
 <222> (973)...(973)

<400> 120
 gatgagcagc gtgctgaact cgacctgggt ggccctgggccc gtcgcggctcg cggtcggggtt 60
 cccggtgctg ctggtcgtgc tgaccgaggt gcacaacgcg ttgcgtcggc gcggcagcgc 120
 gctggcccgc ccggtgcaac tctgcgctac ctacatcctg ccgctgggcg cggttctgct 180
 cctgctggta caggcgatgg agatctccga cgacgccacg tcggtacggg tggtcgccac 240
 cctgttcggc gtcgtgttgt tgacgttggt gctgtccggg ctcaacgccca ccctcatcca 300
 gggcgaccca gaagacagct ggcgcaggcg gattccgctg atcttcctcg acgtcgcgcg 360
 cttcgcgctg atcgcggtcg gtatcaccgt gatcatggcc tatgtctggg gcgcgaacgt 420
 ggggggcctg ttcaccgcac tgggcgtcac ttccatcggt cttggcctgg ctctgcagaa 480
 ttcggtcggg cagatcatct cgggtctgct gctgctgttc gagcaaccgt tccggctcgg 540

```

cgactggatc accgtcccca ccgcggcggg ccggccgtcc gccacggcc gcgtgggtgga 600
agtcaactgg cgtgcaacac atatcgacac ccggcggaac ctgctggtaa tgcccaacgc 660
cgaactcgcc ggcgcgctcg tcaccaatta cagccggccc gtgggagagc accggctgac 720
cgtcgtcacc accttcaacg ccgcggacac ccccgatgat gtctgcgaga tgctgtcgtc 780
ggtcgcggcg tcgtgccccg aactgcgcac cgacggacag atcgccacgc tctatctcgg 840
tgcgggccgaa tacgagaagt cgatcccgtt gcacacaccc gcggtggacg actcggtcag 900
gagcacgtac ctgcatggg tctggtacgc cgcgcgccgg caggaacttc gcctnaacgg 960
cgtcgccgac ganttcgaca cgccggaacg gatcgccctc gccatgcggg ctgtggcgctc 1020
cacactgctc ttggcagacg acgaacagca ggagatcgcc gacgtggtgc gtctggtccg 1080
ttacggcaac ggggaacgcc tccagcagcc gggtcaggta ccgaccggga tgaggttcat 1140
cgtagacggc agggtgagtc tgtccgtgat cgatcaggac ggcgacgtga tcccgccgcg 1200
gggtgctcgag cgtggcgact tcctggggca gaccacgctg acgcgggaac cggtagctggc 1260
gaccgcgcac gcgctggagg aagtcaccgt gctggagatg gcccgtagc agatcgagcg 1320
cctggtgcac cgaaagccga tcctgctgca cgtgatcggg gccgtg 1366

```

<210> 121
 <211> 455
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (318)...(318)

<221> UNSURE
 <222> (324)...(324)

<400> 121

Met	Ser	Ser	Val	Leu	Asn	Ser	Thr	Trp	Leu	Ala	Trp	Ala	Val	Ala	Val
1				5					10					15	
Ala	Val	Gly	Phe	Pro	Val	Leu	Leu	Val	Val	Leu	Thr	Glu	Val	His	Asn
			20					25					30		
Ala	Leu	Arg	Arg	Arg	Gly	Ser	Ala	Leu	Ala	Arg	Pro	Val	Gln	Leu	Leu
		35					40					45			
Arg	Thr	Tyr	Ile	Leu	Pro	Leu	Gly	Ala	Leu	Leu	Leu	Leu	Leu	Val	Gln
	50					55					60				
Ala	Met	Glu	Ile	Ser	Asp	Asp	Ala	Thr	Ser	Val	Arg	Leu	Val	Ala	Thr
65					70					75					80
Leu	Phe	Gly	Val	Val	Leu	Leu	Thr	Leu	Val	Leu	Ser	Gly	Leu	Asn	Ala
				85					90					95	
Thr	Leu	Ile	Gln	Gly	Ala	Pro	Glu	Asp	Ser	Trp	Arg	Arg	Arg	Ile	Pro
			100					105					110		
Ser	Ile	Phe	Leu	Asp	Val	Ala	Arg	Phe	Ala	Leu	Ile	Ala	Val	Gly	Ile
		115					120					125			
Thr	Val	Ile	Met	Ala	Tyr	Val	Trp	Gly	Ala	Asn	Val	Gly	Gly	Leu	Phe
	130					135					140				
Thr	Ala	Leu	Gly	Val	Thr	Ser	Ile	Val	Leu	Gly	Leu	Ala	Leu	Gln	Asn
145					150					155					160
Ser	Val	Gly	Gln	Ile	Ile	Ser	Gly	Leu	Leu	Leu	Leu	Phe	Glu	Gln	Pro
			165					170					175		
Phe	Arg	Leu	Gly	Asp	Trp	Ile	Thr	Val	Pro	Thr	Ala	Ala	Gly	Arg	Pro
		180					185						190		
Ser	Ala	His	Gly	Arg	Val	Val	Glu	Val	Asn	Trp	Arg	Ala	Thr	His	Ile
		195				200					205				
Asp	Thr	Gly	Gly	Asn	Leu	Leu	Val	Met	Pro	Asn	Ala	Glu	Leu	Ala	Gly
	210				215						220				
Ala	Ser	Phe	Thr	Asn	Tyr	Ser	Arg	Pro	Val	Gly	Glu	His	Arg	Leu	Thr


```

<400> 123
cgcaattgat gacggcgcgg ggacagtggc gtgacaccgg gatgggagac accggtgaga      60
ccatcctggg cggaccggac aatctgatgc gctcggactc ccggctgttc cgcgagaacc      120
gggagaagtt cctggccgac gtcgtcgagg ggggaacccc gccggaggtc gccgacgaat      180
cggttgaccg ccgcggcacc acgctgggtg agccggtgac caccgctcc gtcgaggagg      240
cccaacgcgg caacaccggg acgacgatcg aggacgacta tctcggccac gaggcgttac      300
aggcgtactc accggtggac ctgccggggac tgcactgggt gatcgtggcc aagatcgaca      360
ccgacgaggc gttcgccccg gtggcgcgagt tcaccaggac cctggtgctg tcgacggtga      420
tcatcatctt cggcgtgtcg ctggcggcca tgetgctggc gcggttggtc gtccgtccga      480
tccggcgggt gcaggccggc gcccagcaga tcagcggcgg tgactaccgc ctcgctctgc      540
cgggtgtgtc tcgtgacgaa ttcggcgacg tgacaacagc tttcaacgac atgagtcgca      600
atctgtcgat caaggacgag ctgctcggcg aggagcgcgc cgagaaccaa cggctgatgc      660
tgtcctgat gcccgaaacc gtgatgcagc gctacctcga cggggaggag acgatcgccc      720
aggaccacaa gaacgtcacg gtgatcttcg ccgacatgat gggcctcgac gagttgtcgc      780
gcagtgtgac ctccgaggaa ctgacccacg tgggtcaacga cctgaccgc cagttcgacg      840
ccgcgcggcg gagtctcggg gtcgaccacg tgcggacgct gcacgacggg tacctggcca      900
gctgcggggt aggcgtgccc cggctggaca acgtccggcg cacggtcaat ttcgcgatcg      960
aaatggaccg catcatcgac cggcacgccg ccgagtcggg gcacgacctg cggctccgcg     1020
cgggcatcga caccgggtcg gcggccagcg ggctggtggg gcggtccacg ttggcgtacg     1080
acatgtgggg ttcggcggtc gatgtcgctt accaggtgca gcgcgggtcc cccagccccg     1140
gcattctacg cacctcgcgg gtgcacgagg tcatgcagga aactctcgac ttcgtcgccc     1200
ccggggaggt cgtcggcgag cgcggcgctc agacggtctg gcggttgacg ggccacccg     1259

```

```

<210> 124
<211> 299
<212> PRT
<213> Mycobacterium vaccae

```

```

<400> 124
Met Thr Ile Leu Pro Trp Asn Ala Arg Thr Ser Glu His Pro Thr Arg
 1          5          10          15
Lys Arg Arg Gly Arg Tyr His Leu Leu Ser Arg Met Ser Ile Gln Ser
 20          25          30
Lys Leu Leu Leu Met Leu Leu Leu Thr Ser Ile Leu Ser Ala Ala Val
 35          40          45
Val Gly Phe Ile Gly Tyr Gln Ser Gly Arg Ser Ser Leu Arg Ala Ser
 50          55          60
Val Phe Asp Arg Leu Thr Asp Ile Arg Glu Ser Gln Ser Arg Gly Leu
 65          70          75          80
Glu Asn Gln Phe Ala Asp Leu Lys Asn Ser Met Val Ile Tyr Ser Arg
 85          90          95
Gly Ser Thr Ala Thr Glu Ala Ile Gly Ala Phe Ser Asp Gly Phe Arg
100          105          110
Gln Leu Gly Asp Ala Thr Ile Asn Thr Gly Gln Ala Ala Ser Leu Arg
115          120          125
Arg Tyr Tyr Asp Arg Thr Phe Ala Asn Thr Thr Leu Asp Asp Ser Gly
130          135          140
Asn Arg Val Asp Val Arg Ala Leu Ile Pro Lys Ser Asn Pro Gln Arg
145          150          155          160
Tyr Leu Gln Ala Leu Tyr Thr Pro Pro Phe Gln Asn Trp Glu Lys Ala
165          170          175
Ile Ala Phe Asp Asp Ala Arg Asp Gly Ser Ala Trp Ser Ala Ala Asn
180          185          190
Ala Arg Phe Asn Glu Phe Phe Arg Glu Ile Val His Arg Phe Asn Phe
195          200          205
Glu Asp Leu Met Leu Leu Asp Leu Glu Gly Asn Val Val Tyr Ser Ala
210          215          220

```

Tyr Lys Gly Pro Asp Leu Gly Thr Asn Ile Val Asn Gly Pro Tyr Arg
 225 230 235 240
 Asn Arg Glu Leu Ser Glu Ala Tyr Glu Lys Ala Val Ala Ser Asn Ser
 245 250 255
 Ile Asp Tyr Val Gly Val Thr Asp Phe Gly Trp Tyr Leu Pro Ala Glu
 260 265 270
 Glu Pro Thr Ala Trp Phe Leu Ser Pro Val Gly Leu Lys Asp Arg Val
 275 280 285
 Asp Gly Val Met Ala Val Gln Phe Pro Gly Ile
 290 295

<210> 125

<211> 419

<212> PRT

<213> Mycobacterium vaccae

<400> 125

Gln Leu Met Thr Ala Arg Gly Gln Trp Arg Asp Thr Gly Met Gly Asp
 1 5 10 15
 Thr Gly Glu Thr Ile Leu Val Gly Pro Asp Asn Leu Met Arg Ser Asp
 20 25 30
 Ser Arg Leu Phe Arg Glu Asn Arg Glu Lys Phe Leu Ala Asp Val Val
 35 40 45
 Glu Gly Gly Thr Pro Pro Glu Val Ala Asp Glu Ser Val Asp Arg Arg
 50 55 60
 Gly Thr Thr Leu Val Gln Pro Val Thr Thr Arg Ser Val Glu Glu Ala
 65 70 75 80
 Gln Arg Gly Asn Thr Gly Thr Thr Ile Glu Asp Asp Tyr Leu Gly His
 85 90 95
 Glu Ala Leu Gln Ala Tyr Ser Pro Val Asp Leu Pro Gly Leu His Trp
 100 105 110
 Val Ile Val Ala Lys Ile Asp Thr Asp Glu Ala Phe Ala Pro Val Ala
 115 120 125
 Gln Phe Thr Arg Thr Leu Val Leu Ser Thr Val Ile Ile Phe Gly
 130 135 140
 Val Ser Leu Ala Ala Met Leu Leu Ala Arg Leu Phe Val Arg Pro Ile
 145 150 155 160
 Arg Arg Leu Gln Ala Gly Ala Gln Gln Ile Ser Gly Gly Asp Tyr Arg
 165 170 175
 Leu Ala Leu Pro Val Leu Ser Arg Asp Glu Phe Gly Asp Leu Thr Thr
 180 185 190
 Ala Phe Asn Asp Met Ser Arg Asn Leu Ser Ile Lys Asp Glu Leu Leu
 195 200 205
 Gly Glu Glu Arg Ala Glu Asn Gln Arg Leu Met Leu Ser Leu Met Pro
 210 215 220
 Glu Pro Val Met Gln Arg Tyr Leu Asp Gly Glu Glu Thr Ile Ala Gln
 225 230 235 240
 Asp His Lys Asn Val Thr Val Ile Phe Ala Asp Met Met Gly Leu Asp
 245 250 255
 Glu Leu Ser Arg Met Leu Thr Ser Glu Leu Met Val Val Val Asn
 260 265 270
 Asp Leu Thr Arg Gln Phe Asp Ala Ala Glu Ser Leu Gly Val Asp
 275 280 285
 His Val Arg Thr Leu His Asp Gly Tyr Leu Ala Ser Cys Gly Leu Gly
 290 295 300
 Val Pro Arg Leu Asp Asn Val Arg Arg Thr Val Asn Phe Ala Ile Glu
 305 310 315 320

10051643.011802

Met Asp Arg Ile Ile Asp Arg His Ala Ala Glu Ser Gly His Asp Leu
325 330 335
Arg Leu Arg Ala Gly Ile Asp Thr Gly Ser Ala Ala Ser Gly Leu Val
340 345 350
Gly Arg Ser Thr Leu Ala Tyr Asp Met Trp Gly Ser Ala Val Asp Val
355 360 365
Ala Tyr Gln Val Gln Arg Gly Ser Pro Gln Pro Gly Ile Tyr Val Thr
370 375 380
Ser Arg Val His Glu Val Met Gln Glu Thr Leu Asp Phe Val Ala Ala
385 390 395 400
Gly Glu Val Val Gly Glu Arg Gly Val Glu Thr Val Trp Arg Leu Gln
405 410 415
Gly His Pro

<210> 126
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 126
ccggatccga tgagcagcgt gctgaac 27

<210> 127
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 127
gcggatccca cggccccgat cacgtg 26

<210> 128
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 128
ccggatccaa tgacatttct gccctggaat gcg 33

<210> 129
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 129

ccggatccat tcggtggccc tgcaaccgcc ag 32

<210> 130
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 130
ccggatccgg agcaaccggt ccggctc 27

<210> 131
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 131
ccggatcccg gctatcagtc cggacgg 27

<210> 132
<211> 844
<212> DNA
<213> Mycobacterium vaccae

<400> 132
gagcaaccgt tccggctcgg cgactggatc accgtcccca ccgcggcggg ccggccgtcc 60
gcccacggcc gcggtggtgga agtcaactgg cgtgcaacac atatcgacac cggcggcaac 120
ctgctggttaa tgcccaacgc cgaactcgcc ggcgcgtcgt tcaccaatta cagccggccc 180
gtgggagagc accggctgac cgtcgtcacc accttcaacg ccgcggaacac ccccgatgat 240
gtctgcgaga tgctgtcgtc ggctgcggcg tcgctgcccg aactgcgcac cgacggacag 300
atcgccacgc tctatctcgg tgcggccgaa tacgagaagt cgatcccgtt gcacacaccc 360
gcggtggacg actcggtcag gagcacgtac ctgcgatggg tctggtacgc cgcgcgccgg 420
caggaacttc gcctaaccggc gtgcgcgacg attcgacacg ccggaacgga tcgcctcggc 480
catgcgggct gtggcggtcca cactgcgctt ggcagacgac gaacagcagg agatcgccga 540
cgtggtgctg ctggtccgtt acggcaacgg ggaacgcctc cagcagccgg gtcagggtacc 600
gaccgggatg aggttcatcg tagacggcag ggtgagtctg tccgtgatcg atcaggacgg 660
cgacgtgatc ccggcgccgg tgctcgagcg tggcgacttc ctggggcaga ccacgctgac 720
gcgggaaccg gtactggcga ccgcgcacgc gctggaggaa gtcaccgtgc tggagatggc 780
ccgtgacgag atcgagcgcc tgggtgcaccg aaagccgatc ctgctgcacg tgatcggggc 840
cgtg 844

<210> 133
<211> 742
<212> DNA
<213> Mycobacterium vaccae

<400> 133
ggctatcagt ccggacggtc ctgcgtgcgc gcatcggtgt tcgaccgcct caccgacatc 60
cgcgagtgcg agtcgcgcgg gttggagaat cagttcgcgg acctgaagaa ctcgatggtg 120
atttactcgc gcggcagcac tgccacggag gcgatcggcg cgttcagcga cggtttccgt 180
cagctcggcg atgcgacgat caataccggg caggcggcgt cattgcgccg ttactacgac 240
cggacgttcg ccaacaccac cctcgacgac agcggaaacc gcgtcgacgt ccgcgcgctc 300

```

atccccgaaat ccaacccccca gcgctatctg cagggcgctct atacccccgcc gtttcagaac 360
tgggagaagg cgatcgcggt cgacgacgcg cgcgacggca ggcctggtc ggccgccaat 420
gccagattca acgagttctt ccgcgagatc gtgcaccgct tcaacttcga ggatctgatg 480
ctgctcgacc tcgagggcaa cgtggtgtac tccgcctaca aggggccgga tctcgggaca 540
aacatcgta acggccccta tcgcaaccgg gaactgtcgg aagcctacga gaaggcggtc 600
gcgtcgaaact cgatcgacta tgcgggtgtc accgacttcg ggtggtacct gcctgccgag 660
gaaccgaccg cctgggttcct gtccccgggc ggggtgaagg accgagtcga cggtgtgatg 720
gcggtccagt tccccggaat tc 742

```

```

<210> 134
<211> 282
<212> PRT
<213> Mycobacterium vaccae

```

```

<220>
<221> UNSURE
<222> (145)...(145)

```

```

<221> UNSURE
<222> (151)...(151)

```

```

<400> 134

```

```

Glu Gln Pro Phe Arg Leu Gly Asp Trp Ile Thr Val Pro Thr Ala Ala
1          5          10          15
Gly Arg Pro Ser Ala His Gly Arg Val Val Glu Val Asn Trp Arg Ala
20          25          30
Thr His Ile Asp Thr Gly Gly Asn Leu Leu Val Met Pro Asn Ala Glu
35          40          45
Leu Ala Gly Ala Ser Phe Thr Asn Tyr Ser Arg Pro Val Gly Glu His
50          55          60
Arg Leu Thr Val Val Thr Thr Phe Asn Ala Ala Asp Thr Pro Asp Asp
65          70          75          80
Val Cys Glu Met Leu Ser Ser Val Ala Ala Ser Leu Pro Glu Leu Arg
85          90          95
Thr Asp Gly Gln Ile Ala Thr Leu Tyr Leu Gly Ala Ala Glu Tyr Glu
100         105         110
Lys Ser Ile Pro Leu His Thr Pro Ala Val Asp Asp Ser Val Arg Ser
115         120         125
Thr Tyr Leu Arg Trp Val Trp Tyr Ala Ala Arg Arg Gln Glu Leu Arg
130         135         140
Xaa Asn Gly Val Ala Asp Xaa Phe Asp Thr Pro Glu Arg Ile Ala Ser
145         150         155         160
Ala Met Arg Ala Val Ala Ser Thr Leu Arg Leu Ala Asp Asp Glu Gln
165         170         175
Gln Glu Ile Ala Asp Val Val Arg Leu Val Arg Tyr Gly Asn Gly Glu
180         185         190
Arg Leu Gln Gln Pro Gly Gln Val Pro Thr Gly Met Arg Phe Ile Val
195         200         205
Asp Gly Arg Val Ser Leu Ser Val Ile Asp Gln Asp Gly Asp Val Ile
210         215         220
Pro Ala Arg Val Leu Glu Arg Gly Asp Phe Leu Gly Gln Thr Thr Leu
225         230         235         240
Thr Arg Glu Pro Val Leu Ala Thr Ala His Ala Leu Glu Glu Val Thr
245         250         255
Val Leu Glu Met Ala Arg Asp Glu Ile Glu Arg Leu Val His Arg Lys
260         265         270
Pro Ile Leu Leu His Val Ile Gly Ala Val

```

20051643-011302

275

280

<210> 135

<211> 247

<212> PRT

<213> Mycobacterium vaccae

<400> 135

Gly Tyr Gln Ser Gly Arg Ser Ser Leu Arg Ala Ser Val Phe Asp Arg
 1 5 10 15
 Leu Thr Asp Ile Arg Glu Ser Gln Ser Arg Gly Leu Glu Asn Gln Phe
 20 25 30
 Ala Asp Leu Lys Asn Ser Met Val Ile Tyr Ser Arg Gly Ser Thr Ala
 35 40 45
 Thr Glu Ala Ile Gly Ala Phe Ser Asp Gly Phe Arg Gln Leu Gly Asp
 50 55 60
 Ala Thr Ile Asn Thr Gly Gln Ala Ala Ser Leu Arg Arg Tyr Tyr Asp
 65 70 75 80
 Arg Thr Phe Ala Asn Thr Thr Leu Asp Asp Ser Gly Asn Arg Val Asp
 85 90 95
 Val Arg Ala Leu Ile Pro Lys Ser Asn Pro Gln Arg Tyr Leu Gln Ala
 100 105 110
 Leu Tyr Thr Pro Pro Phe Gln Asn Trp Glu Lys Ala Ile Ala Phe Asp
 115 120 125
 Asp Ala Arg Asp Gly Ser Ala Trp Ser Ala Ala Asn Ala Arg Phe Asn
 130 135 140
 Glu Phe Phe Arg Glu Ile Val His Arg Phe Asn Phe Glu Asp Leu Met
 145 150 155 160
 Leu Leu Asp Leu Glu Gly Asn Val Val Tyr Ser Ala Tyr Lys Gly Pro
 165 170 175
 Asp Leu Gly Thr Asn Ile Val Asn Gly Pro Tyr Arg Asn Arg Glu Leu
 180 185 190
 Ser Glu Ala Tyr Glu Lys Ala Val Ala Ser Asn Ser Ile Asp Tyr Val
 195 200 205
 Gly Val Thr Asp Phe Gly Trp Tyr Leu Pro Ala Glu Glu Pro Thr Ala
 210 215 220
 Trp Phe Leu Ser Pro Val Gly Leu Lys Asp Arg Val Asp Gly Val Met
 225 230 235 240
 Ala Val Gln Phe Pro Gly Ile
 245

<210> 136

<211> 45

<212> DNA

<213> Mycobacterium vaccae

<220>

<221> unsure

<222> (18)...(18)

<400> 136

atgagcgaaa tcgcccgncc ctggcggggtt ctggcatgtg gcatac

45

<210> 137

<211> 340

<212> DNA

<213> Mycobacterium vaccae

<220>
<221> unsure
<222> (273)...(273)

<221> unsure
<222> (286)...(286)

<400> 137
gccaccggcg ggcgcgccc ggtgcccgc ggggtgagcg ccccgggcgt cgcgcggcc 60
cccgcgatgc ccgcccggc ggtgtccacg atcgcgccg cgacctcggg cacgctcagc 120
gagtttttcg ccgccaaggg cgtcacgatg gagccgcagt ccagccgcga cttccgcgcc 180
ctcaacatcg tgctgccgaa gccgcggggc tgggagcaca tcccggacct gaacgtgccg 240
gacgcgttcg cgggtgctggc cgaccggggtc agnggtaaag gtcagnagtc gacaaacgcc 300
cacgtggtgg tcgacaaaca cgtaggcgag ttcgacggca 340

<210> 138
<211> 235
<212> DNA
<213> Mycobacterium vaccae

<220>
<221> unsure
<222> (16)...(16)

<400> 138
ggtgaccacc agcgtngaac aggtcgttgc cgaagccgcg gaggccaccg acgcgattgt 60
caacggcttc aaggtcagcg ttccgggtcc gggtcgggcc gcaccgccac ctgcaccggg 120
tgcccccggt gtcccgcccg ccccgggcgc cccggcgctg ccgctggcgc tcgcaccacc 180
cccggtccc gctgttcccg ccgtggcgcc cgcgccacag ctgctgggac tgcag 235

<210> 139
<211> 15
<212> PRT
<213> Mycobacterium vaccae

<400> 139
Met Ser Glu Ile Ala Arg Pro Trp Arg Val Leu Ala Cys Gly Ile
1 5 10 15

<210> 140
<211> 113
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (96)...(96)

<400> 140
Ala Thr Gly Gly Ala Ala Val Pro Ala Gly Val Ser Ala Pro Ala
1 5 10 15
Val Ala Pro Ala Pro Ala Met Pro Ala Arg Pro Val Ser Thr Ile Ala
20 25 30
Pro Ala Thr Ser Gly Thr Leu Ser Glu Phe Phe Ala Ala Lys Gly Val
35 40 45
Thr Met Glu Pro Gln Ser Ser Arg Asp Phe Arg Ala Leu Asn Ile Val

50 55 60
 Leu Pro Lys Pro Arg Gly Trp Glu His Ile Pro Asp Pro Asn Val Pro
 65 70 75 80
 Asp Ala Phe Ala Val Leu Ala Asp Arg Val Gly Gly Lys Gly Gln Xaa
 85 90 95
 Ser Thr Asn Ala His Val Val Val Asp Lys His Val Gly Glu Phe Asp
 100 105 110
 Gly

<210> 141
 <211> 73
 <212> PRT
 <213> Mycobacterium vaccae

<400> 141
 Val Thr Thr Ser Val Glu Gln Val Val Ala Ala Ala Asp Ala Thr Glu
 1 5 10 15
 Ala Ile Val Asn Gly Phe Lys Val Ser Val Pro Gly Pro Gly Pro Ala
 20 25 30
 Ala Pro Pro Pro Ala Pro Gly Ala Pro Gly Val Pro Pro Ala Pro Gly
 35 40 45
 Ala Pro Ala Leu Pro Leu Ala Val Ala Pro Pro Pro Ala Pro Ala Val
 50 55 60
 Pro Ala Val Ala Pro Ala Pro Gln Leu
 65 70

<210> 142
 <211> 273
 <212> DNA
 <213> Mycobacterium vaccae

<400> 142
 ggcacctacg tgcagggggg tctcgccgc atcgagggcc ggggtggccga cagcggatac 60
 agcaacgccg cggccaaggg ctacttcccg ctgagcttca ccgtcgccgg catcgaccag 120
 aacgggtccga tcgtgaccgc caacgtcacc gcgggcgccc cgacggggcg cgtggccacc 180
 cagccgctga cggtcatcgc cgggcccagc cgcaccgat ggcagctgtc caagcagtcc 240
 gcactggccc tgatgtccgc ggtcatcgcc gca 273

<210> 143
 <211> 91
 <212> PRT
 <213> Mycobacterium vaccae

<400> 143
 Ala Thr Tyr Val Gln Gly Gly Leu Gly Arg Ile Glu Ala Arg Val Ala
 1 5 10 15
 Asp Ser Gly Tyr Ser Asn Ala Ala Lys Gly Tyr Phe Pro Leu Ser
 20 25 30
 Phe Thr Val Ala Gly Ile Asp Gln Asn Gly Pro Ile Val Thr Ala Asn
 35 40 45
 Val Thr Ala Ala Ala Pro Thr Gly Ala Val Ala Thr Gln Pro Leu Thr
 50 55 60
 Phe Ile Ala Gly Pro Ser Pro Thr Gly Trp Gln Leu Ser Lys Gln Ser
 65 70 75 80
 Ala Leu Ala Leu Met Ser Ala Val Ile Ala Ala
 85 90

<210> 144
 <211> 554
 <212> DNA
 <213> Mycobacterium vaccae

<400> 144
 gatgtcacgc cgggagaatg taacgttcga cgggagaacg ccgtcggcac aacgagttac 60
 gtttgagcac ttcagatctc ggttaccttg gatttcaggc gggggaagca gtaaccgatc 120
 caagattcga aggacccaaa caacatgaaa ttcactggaa tgaccgtgcg cgcaagccgc 180
 gcgccttggc cggcgctcggg gcggcatgtc tgttcggcgg cgtggcccgcg gcaaccgtgg 240
 cggcacagat ggccggcgcc cagccggcgg agtgcaacgc cagctcactc accggcaccg 300
 tcagtcgggt gaccggtcag gcgcgtcagt acctagacac ccaccgggc gccaaaccagg 360
 ccgtcaccgc ggcgatgaac cagccgcggc ccgaggccga ggcgaacctg cgggggtact 420
 tcaccgcaa cccggcggag tactacgacc tgcggggcat cctcgccccg atcggtgacg 480
 cgcagcgcaa ctgcaacatc accgtgctgc cggtagagct gcagacggcc tacgacacgt 540
 tcatggccgg ctga 554

<210> 145
 <211> 136
 <212> PRT
 <213> Mycobacterium vaccae

<400> 145
 Met Lys Phe Thr Gly Met Thr Val Arg Ala Ser Arg Arg Ala Leu Ala
 1 5 10 15
 Gly Val Gly Ala Ala Cys Leu Phe Gly Gly Val Ala Ala Ala Thr Val
 20 25 30
 Ala Ala Gln Met Ala Gly Ala Gln Pro Ala Glu Cys Asn Ala Ser Ser
 35 40 45
 Leu Thr Gly Thr Val Ser Ser Val Thr Gly Gln Ala Arg Gln Tyr Leu
 50 55 60
 Asp Thr His Pro Gly Ala Asn Gln Ala Val Thr Ala Ala Met Asn Gln
 65 70 75 80
 Pro Arg Pro Glu Ala Glu Ala Asn Leu Arg Gly Tyr Phe Thr Ala Asn
 85 90 95
 Pro Ala Glu Tyr Tyr Asp Leu Arg Gly Ile Leu Ala Pro Ile Gly Asp
 100 105 110
 Ala Gln Arg Asn Cys Asn Ile Thr Val Leu Pro Val Glu Leu Gln Thr
 115 120 125
 Ala Tyr Asp Thr Phe Met Ala Gly
 130 135

<210> 146
 <211> 808
 <212> DNA
 <213> Mycobacterium vaccae

<220>
 <221> unsure
 <222> (15)...(15)

<400> 146
 ccaagtgtga cgcgngtgtg acggtagacg ttccgaccaa tccaacgacg ccgcagctgg 60
 gaatcaccgc tgtgccaaatt cagtgcgggc aacggtgtcc gtccacgaag ggattcagga 120
 aatgatgaca actcgcggga agtcagccgc agtggcggga atcgctgcgg tggccatcct 180
 cgggtcggcc gcatgttcga gtgaggacgg tgggagcacg gcctcgtcgg ccagcagcac 240

```

ggcctcctcc gcgatggagt ccgcgaccga cgagatgacc acgtcgtcgg cggcccccttc 300
ggccgaccct gcggccaacc tgatcggctc cggctgcgcg gcctacgccg agcaggtccc 360
cgaaggtccc gggtcggtgg ccgggatggc agccgatccg gtgacggtgg cggcgctcgaa 420
caaccgatg ctgcagacgc tgtcccaggc gctgtccggc cagctcaatc cgcaggtcaa 480
tctcgtcgac accctcgacg gcggtgagtt caccgtgttc gcgccgaccg acgacgcgtt 540
cgccaagatc gatccggcca cgctggagac cctcaagacg gactccgaca tgctgaccaa 600
catcctgacc taccacgtcg tgcccggcca ggccgcgccc gatcaggtgg tcggcgagca 660
tgtgacggtg gagggggcgc cggtcacggt gtccgggatg gccgaccagc tcaaggtcaa 720
cgacgcgtcg gtggtgtgcg gtgggggtgca gaccgccaac gcgacggtgt atctgatcga 780
caccgtgctg atgccgccgg cagcgtag
808

```

<210> 147
 <211> 228
 <212> PRT
 <213> Mycobacterium vaccae

```

<400> 147
Met Met Thr Thr Arg Arg Lys Ser Ala Ala Val Ala Gly Ile Ala Ala
 1          5          10          15
Val Ala Ile Leu Gly Ala Ala Ala Cys Ser Ser Glu Asp Gly Gly Ser
 20          25          30
Thr Ala Ser Ser Ala Ser Ser Thr Ala Ser Ser Ala Met Glu Ser Ala
 35          40          45
Thr Asp Glu Met Thr Thr Ser Ser Ala Ala Pro Ser Ala Asp Pro Ala
 50          55          60
Ala Asn Leu Ile Gly Ser Gly Cys Ala Ala Tyr Ala Glu Gln Val Pro
 65          70          75          80
Glu Gly Pro Gly Ser Val Ala Gly Met Ala Ala Asp Pro Val Thr Val
 85          90          95
Ala Ala Ser Asn Asn Pro Met Leu Gln Thr Leu Ser Gln Ala Leu Ser
100          105          110
Gly Gln Leu Asn Pro Gln Val Asn Leu Val Asp Thr Leu Asp Gly Gly
115          120          125
Glu Phe Thr Val Phe Ala Pro Thr Asp Asp Ala Phe Ala Lys Ile Asp
130          135          140
Pro Ala Thr Leu Glu Thr Leu Lys Thr Asp Ser Asp Met Leu Thr Asn
145          150          155          160
Ile Leu Thr Tyr His Val Val Pro Gly Gln Ala Ala Pro Asp Gln Val
165          170          175
Val Gly Glu His Val Thr Val Glu Gly Ala Pro Val Thr Val Ser Gly
180          185          190
Met Ala Asp Gln Leu Lys Val Asn Asp Ala Ser Val Val Cys Gly Gly
195          200          205
Val Gln Thr Ala Asn Ala Thr Val Tyr Leu Ile Asp Thr Val Leu Met
210          215          220
Pro Pro Ala Ala
225

```

<210> 148
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab
 <221> unsure

<222> (12)...(12)

<221> unsure

<222> (17)...(17)

<400> 148

gcscsctsg gnccggntgy gc

22

<210> 149

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<221> unsure

<222> (10)...(10)

<221> unsure

<222> (13)...(13)

<221> unsure

<222> (16)...(16)

<221> unsure

<222> (20)...(20)

<400> 149

rtasgcsgcn gtngcnacng g

21

<210> 150

<211> 102

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<400> 150

gccccgctcg gccccggctg tgcggcctac gtgcaacagg tgccggacgg gccgggatcg
gtgcagggca tggcgagctc gcccgtagcg accgccgcgt at

60

102

<210> 151

<211> 683

<212> DNA

<213> Mycobacterium vaccae

<400> 151

gcccgcacac taaaaccgcc gatcatccac tgcaggaagg aatctcacga tcatgaacat 60
cagcatgaaa actcttgccg gagcgggttt cgcatgacc gccgccgctg gtctgtcgct 120
gggtaccgca ggcagcgccg cagccgcgcc ggtcggaccg ggggtgtgctg cctacgtgca 180
acaggtgccg gacggggccg gatcgggtgca gggcatggcg agctcgccgg tggccaccgc 240
ggcggccgac aaccgctgc tcaccacgct ctgcgaggcg atctcggtc agctcaacc 300
gaacgtcaat ctctgcgaca cgttcaacgg cggccagttc accgtgttcg cgccgaccaa 360
tgacgccttc gccagatcg atccggccac gctggagacc ctcaagaccg attccgacct 420
gctgaccaag atcctcacct accacgtcgt gccgggccag gccgcgcccg atcaggtggt 480

cggcgagcat gtgacggtgg agggggcgcc ggtcacggtg tccgggatgg ccgaccagct 540
 caaggtcaac gacgcgtcgg tgggtgtcgg tgggggtgcag accgccaacg cgacggtgta 600
 tctgatcgac accgtgctga tgccgcccggc agcgtagccg ggcggcacca cagaagaggg 660
 tccccgcac ccggcctccc ccg 683

<210> 152
 <211> 231
 <212> PRT
 <213> Mycobacterium vaccae

<400> 152
 Asp Thr Val Leu Met Pro Pro Ala Asn Asn Arg Arg Ser Ser Thr Ala
 1 5 10 15
 Gly Arg Asn Leu Thr Ile Met Asn Ile Ser Met Lys Thr Leu Ala Gly
 20 25 30
 Ala Gly Phe Ala Met Thr Ala Ala Val Gly Leu Ser Leu Gly Thr Ala
 35 40 45
 Gly Ser Ala Ala Ala Ala Pro Val Gly Pro Gly Cys Ala Ala Tyr Val
 50 55 60
 Gln Gln Val Pro Asp Gly Pro Gly Ser Val Gln Gly Met Ala Ser Ser
 65 70 75 80
 Pro Val Ala Thr Ala Ala Ala Asp Asn Pro Leu Leu Thr Thr Leu Ser
 85 90 95
 Gln Ala Ile Ser Gly Gln Leu Asn Pro Asn Val Asn Leu Val Asp Thr
 100 105 110
 Phe Asn Gly Gly Gln Phe Thr Val Phe Ala Pro Thr Asn Asp Ala Phe
 115 120 125
 Ala Lys Ile Asp Pro Ala Thr Leu Glu Thr Leu Lys Thr Asp Ser Asp
 130 135 140
 Leu Leu Thr Lys Ile Leu Thr Tyr His Val Val Pro Gly Gln Ala Ala
 145 150 155 160
 Pro Asp Gln Val Val Gly Glu His Val Thr Val Glu Gly Ala Pro Val
 165 170 175
 Thr Val Ser Gly Met Ala Asp Gln Leu Lys Val Asn Asp Ala Ser Val
 180 185 190
 Val Cys Gly Gly Val Gln Thr Ala Asn Ala Thr Val Tyr Leu Ile Asp
 195 200 205
 Thr Val Leu Met Pro Pro Ala Ala Pro Gly Gly Thr Thr Glu Glu Gly
 210 215 220
 Pro Pro His Pro Ala Ser Pro
 225 230

<210> 153
 <211> 1125
 <212> DNA
 <213> Mycobacterium vaccae

<220>
 <221> unsure
 <222> (358)...(358)

<400> 153
 atgcagggtgc ggcgtgttct gggcagtgtc ggtgcagcag tccggttttc ggccgcgtta 60
 tggcagacgg gggtttcgat accgaccgcc tcagcggatc cgtgtccgga catcgagggt 120
 atcttcgcgc gcgggaccgg tgcggaacccc ggcctcgggt gggtcggtga tgcgttcgtc 180
 aacgcgctgc ggccaaggt cggtgagcag tcggtgggca cctacgcggt gaactaccgc 240
 gcaggattcg gacttcgaca aatcggcgcc catgggcgcg gccgacgcat cggggcgggt 300

gcagtggatg	gccgacaact	gcccggacac	caagcttgtc	ctgggcgga	tgtcgcanng	360
cgccggcgtc	atcgacctga	tcaccgtcga	tccgcgaccg	ctgggcccgt	tcacccccac	420
cccgatgccg	ccccgcgtcg	ccgaccacgt	ggccgcccgt	gtggctcttcg	gaaatccgtt	480
gcgcgacatc	cgtgggtggcg	gtccgctgcc	gcagatgagc	ggcacctacg	ggccgaagtc	540
gatcgatctg	tgtgcgctcg	acgatccgtt	ctgctcgccc	ggcttcaacc	tgccggccca	600
cttcgcctac	gccgacaacg	gcatggtgga	ggaagccgcg	aacttcgccc	gcctggaacc	660
gggcccagagc	gtcgagctgc	ccgagggccc	ctacctgcac	ctgttcgtcc	cgcggggcga	720
ggtaacgctg	gaggacgccc	gaccgctgcg	cgaaggcgac	gcagtgcgtt	tcaccgcatc	780
gggcccgcag	cgggtgaccg	ccaccgcgcc	cgccgagatc	ctcgtctggg	agatgcatgc	840
gggactcggg	gcggcataag	cgaataggag	tccgtctggc	cgccgcagca	ctgctcgccc	900
gatgcacatc	cgaacctgga	cccggggccg	cgccggcacc	ggccccgacg	agcacaaccg	960
agagcgcacc	cgggtcccga	ctcgtcccgg	tgaccgtcgc	ggtcgacgaa	cctctggccc	1020
acgcgccgtt	cgaccagccc	cgggagggccc	tggtgcccga	gggttggaag	ctgtcggtgt	1080
gggcgcggac	cgcccggccc	cggctggccc	cgtggggccc	ggacg		1125

<210> 154
 <211> 748
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (119)...(119)

<400> 154

Met	Gln	Val	Arg	Arg	Val	Leu	Gly	Ser	Val	Gly	Ala	Ala	Val	Ala	Val
1				5					10					15	
Ser	Ala	Ala	Leu	Trp	Gln	Thr	Gly	Val	Ser	Ile	Pro	Thr	Ala	Ser	Ala
			20					25					30		
Asp	Pro	Cys	Pro	Asp	Ile	Glu	Val	Ile	Phe	Ala	Arg	Gly	Thr	Gly	Ala
		35					40					45			
Glu	Pro	Gly	Leu	Gly	Trp	Val	Gly	Asp	Ala	Phe	Val	Asn	Ala	Leu	Arg
	50					55					60				
Pro	Lys	Val	Gly	Glu	Gln	Ser	Val	Gly	Thr	Tyr	Ala	Val	Asn	Tyr	Pro
65					70					75				80	
Ala	Gly	Phe	Asp	Phe	Asp	Lys	Ser	Ala	Pro	Met	Gly	Ala	Ala	Asp	Ala
				85					90					95	
Ser	Gly	Arg	Val	Gln	Trp	Met	Ala	Asp	Asn	Cys	Pro	Asp	Thr	Lys	Leu
			100					105					110		
Val	Leu	Gly	Gly	Met	Ser	Xaa	Gly	Ala	Gly	Val	Ile	Asp	Leu	Ile	Thr
	115						120					125			
Val	Asp	Pro	Arg	Pro	Leu	Gly	Arg	Phe	Thr	Pro	Thr	Pro	Met	Pro	Pro
	130					135					140				
Arg	Val	Ala	Asp	His	Val	Ala	Ala	Val	Val	Val	Phe	Gly	Asn	Pro	Leu
145					150					155				160	
Arg	Asp	Ile	Arg	Gly	Gly	Gly	Pro	Arg	Leu	Glu	Pro	Arg	Gly	Leu	Asn
				165				170					175		
Met	Glu	Thr	Ser	Glu	Arg	Gly	Leu	Tyr	Thr	His	Arg	Thr	Tyr	Arg	Gly
			180					185					190		
Leu	Tyr	Pro	Arg	Leu	Tyr	Ser	Ser	Glu	Arg	Ile	Leu	Glu	Ala	Ser	Pro
	195						200					205			
Leu	Glu	Cys	Tyr	Ser	Ala	Leu	Ala	Leu	Glu	Ala	Ser	Pro	Ala	Ser	Pro
	210					215					220				
Pro	Arg	Pro	His	Glu	Cys	Tyr	Ser	Ser	Glu	Arg	Pro	Arg	Gly	Leu	Tyr
225					230					235				240	
Pro	His	Glu	Ala	Ser	Asn	Leu	Glu	Pro	Arg	Ala	Leu	Ala	His	Ile	Ser
				245					250					255	

Pro	His	Glu	Ala	Leu	Ala	Thr	Tyr	Arg	Ala	Leu	Ala	Ala	Ser	Pro	Ala
			260					265					270		
Ser	Asn	Gly	Leu	Tyr	Met	Glu	Thr	Val	Ala	Leu	Gly	Leu	Gly	Leu	Ala
		275					280					285			
Leu	Ala	Ala	Leu	Ala	Ala	Ser	Asn	Pro	His	Glu	Ala	Leu	Ala	Ala	Arg
		290				295					300				
Gly	Leu	Glu	Gly	Leu	Pro	Arg	Gly	Leu	Tyr	Gly	Leu	Asn	Ser	Glu	Arg
305					310					315					320
Val	Ala	Leu	Gly	Leu	Leu	Glu	Pro	Arg	Gly	Leu	Ala	Leu	Ala	Pro	Arg
				325					330					335	
Thr	Tyr	Arg	Leu	Glu	His	Ile	Ser	Leu	Glu	Pro	His	Glu	Val	Ala	Leu
			340					345					350		
Pro	Arg	Ala	Arg	Gly	Gly	Leu	Tyr	Gly	Leu	Val	Ala	Leu	Thr	His	Arg
		355					360					365			
Leu	Glu	Gly	Leu	Ala	Ser	Pro	Ala	Leu	Ala	Gly	Leu	Tyr	Pro	Arg	Leu
		370				375					380				
Glu	Ala	Arg	Gly	Gly	Leu	Gly	Leu	Tyr	Ala	Ser	Pro	Ala	Leu	Ala	Val
385					390					395					400
Ala	Leu	Ala	Arg	Gly	Pro	His	Glu	Thr	His	Arg	Ala	Leu	Ala	Ser	Glu
				405					410					415	
Arg	Gly	Leu	Tyr	Gly	Leu	Tyr	Gly	Leu	Asn	Ala	Arg	Gly	Val	Ala	Leu
			420					425					430		
Thr	His	Arg	Ala	Leu	Ala	Thr	His	Arg	Ala	Leu	Ala	Pro	Arg	Ala	Leu
		435					440					445			
Ala	Gly	Leu	Ile	Leu	Glu	Leu	Glu	Val	Ala	Leu	Thr	Arg	Pro	Gly	Leu
		450				455					460				
Met	Glu	Thr	His	Ile	Ser	Ala	Leu	Ala	Gly	Leu	Tyr	Leu	Glu	Gly	Leu
465					470					475					480
Tyr	Ala	Leu	Ala	Ala	Leu	Ala	Ala	Leu	Ala	Ala	Ser	Asn	Ala	Arg	Gly
				485					490					495	
Ser	Glu	Arg	Pro	Arg	Ala	Leu	Ala	Gly	Leu	Tyr	Ala	Arg	Gly	Ala	Arg
			500					505					510		
Gly	Ser	Glu	Arg	Thr	His	Arg	Ala	Leu	Ala	Ala	Arg	Gly	Ala	Arg	Gly
		515					520					525			
Met	Glu	Thr	His	Ile	Ser	Ile	Leu	Glu	Ala	Arg	Gly	Thr	His	Arg	Thr
		530				535					540				
Arg	Pro	Thr	His	Arg	Ala	Arg	Gly	Ala	Leu	Ala	Val	Ala	Leu	Gly	Leu
545					550					555					560
Tyr	Gly	Leu	Tyr	Thr	His	Arg	Gly	Leu	Tyr	Pro	Arg	Ala	Ser	Pro	Gly
				565					570					575	
Leu	His	Ile	Ser	Ala	Ser	Asn	Ala	Arg	Gly	Gly	Leu	Ala	Arg	Gly	Thr
			580					585					590		
His	Arg	Ala	Arg	Gly	Ser	Glu	Arg	Ala	Arg	Gly	Thr	His	Arg	Ala	Arg
		595					600								

705 710 715 720
 Ala Leu Ala Gly Leu Tyr Ala Arg Gly Val Ala Leu Gly Leu Tyr Pro
 725 730 735
 Arg Gly Leu Tyr Ala Arg Gly Pro Arg Gly Leu Tyr
 740 745

<210> 155
 <211> 666
 <212> DNA
 <213> Mycobacterium vaccae

<400> 155
 atgaaggcaa atcattcggg atgctacaaa tccgccggcc cgatatggtc gcatccatcg 60
 ccgctttgtt cggccgcaact ggcaccatct catgcaggtc tggacaatga gctgagcctg 120
 ggcattccag gccaggggccc ggaacgactg accattcagc agtgggacac cttcctcaac 180
 ggcgctcttc cgttggaccg caaccgggtg acccgggagt ggttccactc gggcaaggcg 240
 acctacgtcg tggccggtga aggtgcogac gagttcgagg gcacgctgga gctgggctac 300
 cagggtgggct ttccgtggtc gctgggctg ggcattcaact tcagctacac caccgccaac 360
 atcacgtacg acggttacgg cctcaacttc gccgaccgc tgctgggctt cggtgattcc 420
 atcgtgaccc cggcgtgtt cccgggtgtc tcgatcacgg cggacctggg caacggcccc 480
 ggcattccag aggtcgcgac cttctcgtg gacgtggccg gcccgggtg ttccgtgggtg 540
 gtgtccaacg cgcacggcac ggtcaccggt gctgccggtg gtgtgctgct gcgtccgttc 600
 gccgcctga tctcgtcgac cggcgacagc gtcaccacct acggcgcacc ctggaacatg 660
 aactga 666

<210> 156
 <211> 221
 <212> PRT
 <213> Mycobacterium vaccae

<400> 156
 Met Lys Ala Asn His Ser Gly Cys Tyr Lys Ser Ala Gly Pro Ile Trp
 1 5 10 15
 Ser His Pro Ser Pro Leu Cys Ser Pro Ala Leu Ala Pro Ser His Ala
 20 25 30
 Gly Leu Asp Asn Glu Leu Ser Leu Gly Val His Gly Gln Gly Pro Glu
 35 40 45
 His Leu Thr Ile Gln Gln Trp Asp Thr Phe Leu Asn Gly Val Phe Pro
 50 55 60
 Leu Asp Arg Asn Arg Leu Thr Arg Glu Trp Phe His Ser Gly Lys Ala
 65 70 75 80
 Thr Tyr Val Val Ala Gly Glu Gly Ala Asp Glu Phe Glu Gly Thr Leu
 85 90 95
 Glu Leu Gly Tyr His Val Gly Phe Pro Trp Ser Leu Gly Val Gly Ile
 100 105 110
 Asn Phe Ser Tyr Thr Thr Pro Asn Ile Thr Tyr Asp Gly Tyr Gly Leu
 115 120 125
 Asn Phe Ala Asp Pro Leu Leu Gly Phe Gly Asp Ser Ile Val Thr Pro
 130 135 140
 Pro Leu Phe Pro Gly Val Ser Ile Thr Ala Asp Leu Gly Asn Gly Pro
 145 150 155 160
 Gly Ile Gln Glu Val Ala Thr Phe Ser Val Asp Val Ala Gly Pro Gly
 165 170 175
 Gly Ser Val Val Val Ser Asn Ala His Gly Thr Val Thr Gly Ala Ala
 180 185 190
 Gly Gly Val Leu Leu Arg Pro Phe Ala Arg Leu Ile Ser Ser Thr Gly
 195 200 205

Asp Ser Val Thr Thr Tyr Gly Ala Pro Trp Asn Met Asn
210 215 220

<210> 157
<211> 480
<212> DNA
<213> Mycobacterium vaccae

<400> 157

aacggctggg	acatcaacac	ccctgcgttc	gagtggttct	acgagtcg	cttgtcgacg	60
atcatgccgg	tgcgcggaca	gtccagcttc	tacagcgact	ggtaccagcc	gtctcggggc	120
aacgggcaga	actacaccta	caagtgggag	acgttcctga	cccaggagct	gccgacgtgg	180
ctggaggcca	accgcggagt	gtcgcgcacc	ggcaacgcgt	tcgtcggcct	gtcgatggcg	240
ggcagcgcg	cgctgacct	cgcgatccat	cacccgcagc	agttcatcta	cgctcgtcg	300
ctgtcaggct	tcctgaaccc	gtccgagggc	tggtggccga	tgctgatcgg	gctggcgatg	360
aacgacgcag	gcggcttcaa	cgccgagagc	atgtggggcc	cgctctcgga	cccggcgatg	420
aagcgcaacg	acccgatggg	caacatcaac	cagctgggtg	ccaacaacac	ccggatctgg	480

<210> 158
<211> 161
<212> PRT
<213> Mycobacterium vaccae

<400> 158

Asn Gly Trp Asp	Ile Asn Thr Pro Ala Phe Glu Trp Phe Tyr Glu Ser	1 5 10 15
Gly Leu Ser Thr	Ile Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser	20 25 30
Asp Trp Tyr Gln	Pro Ser Arg Gly Asn Gly Gln Asn Tyr Thr Tyr Lys	35 40 45
Trp Glu Thr Phe	Leu Thr Gln Glu Leu Pro Thr Trp Leu Glu Ala Asn	50 55 60
Arg Gly Val Ser	Arg Thr Gly Asn Ala Phe Val Gly Leu Ser Met Ala	65 70 75 80
Gly Ser Ala Ala	Leu Thr Tyr Ala Ile His His Pro Gln Gln Phe Ile	85 90 95
Tyr Ala Ser Ser	Leu Ser Gly Phe Leu Asn Pro Ser Glu Gly Trp Trp	100 105 110
Pro Met Leu Ile	Gly Leu Ala Met Asn Asp Ala Gly Gly Phe Asn Ala	115 120 125
Glu Ser Met Trp	Gly Pro Ser Ser Asp Pro Ala Trp Lys Arg Asn Asp	130 135 140
Pro Met Val Asn	Ile Asn Gln Leu Val Ala Asn Asn Thr Arg Ile Trp	145 150 155 160
Ile		

<210> 159
<211> 1626
<212> DNA
<213> Mycobacterium vaccae

<400> 159

atggccaaga	caattgcgta	tgacgaagag	gcccgcgctg	gcctcgagcg	gggcctcaac	60
gccctcgag	acgccgtaaa	ggtgacgttg	ggcccgaagg	gtcgcaacgt	cgtgctggag	120
aagaagtggg	gcgccccac	gatcaccaac	gatggtgtgt	ccatcgccaa	ggagatcgag	180
ctggaggacc	cgtacgagaa	gatcggcgct	gagctggtca	aagaggtcgc	caagaagacc	240

2025.10.13 10:05:16

gacgacgtcg	cgggcgacgg	caccaccacc	gccaccgtgc	tcgctcaggg	tctgggttcgc	300
gaaggcctgc	gcaacgtcgc	agccggcgcc	aaccgcgtcg	gcctcaagcg	tggcatcgag	360
aaggctgtcg	aggctgtcac	ccagtcgctg	ctgaagtcgg	ccaaggaggt	cgagaccaag	420
gagcagattt	ctgccaccgc	ggcgatttcc	gccggcgaca	cccagatcgg	cgagctcatc	480
gccgaggcca	tggacaaggt	cggcaacgag	ggtgtcatca	ccgtcgagga	gtcgaacacc	540
ttcggcctgc	agctcgagct	caccgagggg	atgcgcttcg	acaaggggta	catctcgggt	600
tacttcgtga	ccgacgccga	gcgccaggaa	gccgtcctgg	aggatcccta	catcctgctg	660
gtcagctcca	aggtgtcgac	cgtcaaggat	ctgctcccgc	tgctggagaa	ggtcacccag	720
gccggcaagc	cgctgctgat	catcgccgag	gacgtcgagg	gcgaggccct	gtccacgctg	780
gtggtcaaca	agatccgcgg	caccttcaag	tccgtcgccg	tcaaggctcc	gggcttcggg	840
gaccgccgca	aggcgatgct	gcaggacatg	gccatcctca	ccggtgggtca	ggtcgtcagc	900
gaaagagtcg	ggctgtccct	ggagaccgcc	gacgtctcgc	tgctggggcca	ggcccgcgaa	960
gtcgtcgta	ccaaggacga	gaccaccatc	gtcgaggggt	cgggcgattc	cgatgccatc	1020
gccggccggg	tggctcagat	ccgcgcggag	atcgagaaca	gcgactccga	ctacgaccgc	1080
gagaagctgc	aggagcgct	ggccaagctg	gccggcggtg	ttgcggtgat	caaggccgga	1140
gctgccaccg	aggtggagct	caaggagcgc	aagcaccgca	tcgaggacgc	cgtccgcaac	1200
gcgaaggctg	ccgtcgaaga	gggcacgtgc	gccgggtggc	gcgtgggtct	gctgcagtcg	1260
gctcctgctg	tggacgacct	cggcctgacg	ggcgacgagg	ccaccggtgc	caacatcgtc	1320
cgcgtggcgc	tgctcggtcc	gctcaagcag	atcgccctca	acggcgccct	ggagcccggc	1380
gtcgttgccg	agaaggtgtc	caacctgccc	gcgggtcacg	gcctcaacgc	cgcgaccggt	1440
gagtacgagg	acctgctcaa	ggccggcgct	gccgaccggg	tgaaggtcac	ccgctcggcg	1500
ctgcagaacg	cggcgctccat	cgcggctctg	ttcctcacca	ccgaggccgt	cgctcgccgac	1560
aagccggaga	aggcgctccg	acccgcgggc	gaccgcgacc	gtggcatggg	cggtatggac	1620
ttctaa						1626

<210> 160

<211> 541

<212> PRT

<213> Mycobacterium vaccae

<400> 160

Met	Ala	Lys	Thr	Ile	Ala	Tyr	Asp	Glu	Glu	Ala	Arg	Arg	Gly	Leu	Glu
1				5					10					15	
Arg	Gly	Leu	Asn	Ala	Leu	Ala	Asp	Ala	Val	Lys	Val	Thr	Leu	Gly	Pro
			20					25					30		
Lys	Gly	Arg	Asn	Val	Val	Leu	Glu	Lys	Lys	Trp	Gly	Ala	Pro	Thr	Ile
			35				40					45			
Thr	Asn	Asp	Gly	Val	Ser	Ile	Ala	Lys	Glu	Ile	Glu	Leu	Glu	Asp	Pro
			50			55					60				
Tyr	Glu	Lys	Ile	Gly	Ala	Glu	Leu	Val	Lys	Glu	Val	Ala	Lys	Lys	Thr
65					70					75				80	
Asp	Asp	Val	Ala	Gly	Asp	Gly	Thr	Thr	Thr	Ala	Thr	Val	Leu	Ala	Gln
			85					90					95		
Ala	Leu	Val	Arg	Glu	Gly	Leu	Arg	Asn	Val	Ala	Ala	Gly	Ala	Asn	Pro
			100					105					110		
Leu	Gly	Leu	Lys	Arg	Gly	Ile	Glu	Lys	Ala	Val	Glu	Ala	Val	Thr	Gln
			115				120					125			
Ser	Leu	Leu	Lys	Ser	Ala	Lys	Glu	Val	Glu	Thr	Lys	Glu	Gln	Ile	Ser
			130			135					140				
Ala	Thr	Ala	Ala	Ile	Ser	Ala	Gly	Asp	Thr	Gln	Ile	Gly	Glu	Leu	Ile
145					150					155				160	
Ala	Glu	Ala	Met	Asp	Lys	Val	Gly	Asn	Glu	Gly	Val	Ile	Thr	Val	Glu
			165					170					175		
Glu	Ser	Asn	Thr	Phe	Gly	Leu	Gln	Leu	Glu	Leu	Thr	Glu	Gly	Met	Arg
			180				185						190		
Phe	Asp	Lys	Gly	Tyr	Ile	Ser	Gly	Tyr	Phe	Val	Thr	Asp	Ala	Glu	Arg
			195				200					205			

Gln Glu Ala Val Leu Glu Asp Pro Tyr Ile Leu Leu Val Ser Ser Lys
 210 215 220
 Val Ser Thr Val Lys Asp Leu Leu Pro Leu Leu Glu Lys Val Ile Gln
 225 230 235 240
 Ala Gly Lys Pro Leu Leu Ile Ile Ala Glu Asp Val Glu Gly Glu Ala
 245 250 255
 Leu Ser Thr Leu Val Val Asn Lys Ile Arg Gly Thr Phe Lys Ser Val
 260 265 270
 Ala Val Lys Ala Pro Gly Phe Gly Asp Arg Arg Lys Ala Met Leu Gln
 275 280 285
 Asp Met Ala Ile Leu Thr Gly Gly Gln Val Val Ser Glu Arg Val Gly
 290 295 300
 Leu Ser Leu Glu Thr Ala Asp Val Ser Leu Leu Gly Gln Ala Arg Lys
 305 310 315 320
 Val Val Val Thr Lys Asp Glu Thr Thr Ile Val Glu Gly Ser Gly Asp
 325 330 335
 Ser Asp Ala Ile Ala Gly Arg Val Ala Gln Ile Arg Ala Glu Ile Glu
 340 345 350
 Asn Ser Asp Ser Asp Tyr Asp Arg Glu Lys Leu Gln Glu Arg Leu Ala
 355 360 365
 Lys Leu Ala Gly Gly Val Ala Val Ile Lys Ala Gly Ala Ala Thr Glu
 370 375 380
 Val Glu Leu Lys Glu Arg Lys His Arg Ile Glu Asp Ala Val Arg Asn
 385 390 395 400
 Ala Lys Ala Ala Val Glu Glu Gly Ile Val Ala Gly Gly Gly Val Ala
 405 410 415
 Leu Leu Gln Ser Ala Pro Ala Leu Asp Asp Leu Gly Leu Thr Gly Asp
 420 425 430
 Glu Ala Thr Gly Ala Asn Ile Val Arg Val Ala Leu Ser Ala Pro Leu
 435 440 445
 Lys Gln Ile Ala Phe Asn Gly Gly Leu Glu Pro Gly Val Val Ala Glu
 450 455 460
 Lys Val Ser Asn Leu Pro Ala Gly His Gly Leu Asn Ala Ala Thr Gly
 465 470 475 480
 Glu Tyr Glu Asp Leu Lys Ala Gly Val Ala Asp Pro Val Lys Val
 485 490 495
 Thr Arg Ser Ala Leu Gln Asn Ala Ala Ser Ile Ala Ala Leu Phe Leu
 500 505 510
 Thr Thr Glu Ala Val Val Ala Asp Lys Pro Glu Lys Ala Ser Ala Pro
 515 520 525
 Ala Gly Asp Pro Thr Gly Gly Met Gly Gly Met Asp Phe
 530 535 540

<210> 161

<211> 985

<212> DNA

<213> Mycobacterium vaccae

<400> 161

ggatccctac atcctgctgg tcagctccaa ggtgtcgacc gtcaaggatc tgctcccgtc	60
gctggagaag gtcattccagg ccggcaagcc gctgctgac atcgccgagg acgtcgaggg	120
cgaggccctg tccacgctgg tggtaacaa gatccgcggc accttcaagt ccgtcgccgt	180
caaggtcccg ggcttcggtg accgcccga ggcgatgctg caggacatgg ccatcctcac	240
cggtggtcag gtcgtcagcg aaagagtcgg gctgtccctg gagaccgag acgtctcgct	300
gctggggcag gcccgcaagg tcgtcggtcac caaggacgag accaccatcg tcgagggctc	360
gggcgattcc gatgcatcg ccggccgggt ggctcagatc cgcgccgaga tcgagaacag	420
cgactccgac tacgaccgag agaagctgca ggagcgctg gccaaagctg ccggcggtgt	480

tgcggtgatac	aaggccggag	ctgccaccga	ggtggagctc	aaggagcgca	agcaccgcat	540
cgaggacgcc	gtccgcaacg	cgaaggetgc	cgtcgaagag	ggcatcgctc	ccggtggcgg	600
cgtggctctg	ctgcagtcgg	ctcctgcgct	ggacgacctc	ggcctgacgg	gcgacgaggg	660
caccggtgcc	aacatcgctc	gcgtggcgct	gtcggctccg	ctcaagcaga	tcgccttcaa	720
cggcggcctg	gagcccgcg	tcgttgccga	gaaggtgtcc	aacctgccc	cgggtcacgg	780
cctcaacgcc	gcgaccggtg	agtacgagga	cctgctcaag	gccggcgctc	ccgaccgggt	840
gaaggtcacc	cgctcggcgc	tgcagaacgc	ggcgctccatc	gcggctctgt	tcctcaccac	900
cgaggccgctc	gtcgccgaca	agccggagaa	ggcgctccgca	cccgcggggc	acccgaccgg	960
tggcatgggc	ggtatggact	tctaa				985

<210> 162
 <211> 327
 <212> PRT
 <213> Mycobacterium vaccae

<400> 162

Asp	Pro	Tyr	Ile	Leu	Val	Ser	Ser	Lys	Val	Ser	Thr	Val	Lys	Asp
1			5					10					15	
Leu	Leu	Pro	Leu	Leu	Glu	Lys	Val	Ile	Gln	Ala	Gly	Lys	Pro	Leu
			20					25					30	Leu
Ile	Ile	Ala	Glu	Asp	Val	Glu	Gly	Glu	Ala	Leu	Ser	Thr	Leu	Val
		35					40					45		Val
Asn	Lys	Ile	Arg	Gly	Thr	Phe	Lys	Ser	Val	Ala	Val	Lys	Ala	Pro
	50					55					60			Gly
Phe	Gly	Asp	Arg	Arg	Lys	Ala	Met	Leu	Gln	Asp	Met	Ala	Ile	Leu
65					70					75				80
Gly	Gly	Gln	Val	Val	Ser	Glu	Arg	Val	Gly	Leu	Ser	Leu	Glu	Thr
			85						90					95
Asp	Val	Ser	Leu	Leu	Gly	Gln	Ala	Arg	Lys	Val	Val	Val	Thr	Lys
			100					105					110	Asp
Glu	Thr	Thr	Ile	Val	Glu	Gly	Ser	Gly	Asp	Ser	Asp	Ala	Ile	Ala
		115					120					125		Gly
Arg	Val	Ala	Gln	Ile	Arg	Ala	Glu	Ile	Glu	Asn	Ser	Asp	Ser	Asp
	130					135					140			Tyr
Asp	Arg	Glu	Lys	Leu	Gln	Glu	Arg	Leu	Ala	Lys	Leu	Ala	Gly	Gly
145				150						155				160
Ala	Val	Ile	Lys	Ala	Gly	Ala	Ala	Thr	Glu	Val	Glu	Leu	Lys	Glu
			165					170						175
Lys	His	Arg	Ile	Glu	Asp	Ala	Val	Arg	Asn	Ala	Lys	Ala	Ala	Val
			180					185					190	Glu
Glu	Gly	Ile	Val	Ala	Gly	Gly	Gly	Val	Ala	Leu	Leu	Gln	Ser	Ala
		195					200					205		Pro
Ala	Leu	Asp	Asp	Leu	Gly	Leu	Thr	Gly	Asp	Glu	Ala	Thr	Gly	Ala
	210					215					220			Asn
Ile	Val	Arg	Val	Ala	Leu	Ser	Ala	Pro	Leu	Lys	Gln	Ile	Ala	Phe
225				230						235				240
Gly	Gly	Leu	Glu	Pro	Gly	Val	Val	Ala	Glu	Lys	Val	Ser	Asn	Leu
			245						250					255
Ala	Gly	His	Gly	Leu	Asn	Ala	Ala	Thr	Gly	Glu	Tyr	Glu	Asp	Leu
		260					265						270	Leu
Lys	Ala	Gly	Val	Ala	Asp	Pro	Val	Lys	Val	Thr	Arg	Ser	Ala	Leu
	275					280						285		Gln
Asn	Ala	Ala	Ser	Ile	Ala	Ala	Leu	Phe	Leu	Thr	Thr	Glu	Ala	Val
	290				295						300			Val
Ala	Asp	Lys	Pro	Glu	Lys	Ala	Ser	Ala	Pro	Ala	Gly	Asp	Pro	Thr
305				310						315				Gly
Gly	Met	Gly	Gly	Met	Asp	Phe								

10051643-011802

<210> 163
 <211> 403
 <212> DNA
 <213> Mycobacterium vaccae

<400> 163
 ggatccgcgg caccggctgg tgacgaccaa gtacaacccg gcccgcacct ggacggccga 60
 gaactccgtc ggcatcggcg gcgcgtacct gtgcatctac gggatggagg gcccggcgcg 120
 ctatcagttc gtcggccgca ccacccaggt gtggagtcgt taccgccaca cggcgccgtt 180
 cgaaccggga agtccctggc tgcctgcggt tttcgaccga atttcgtggt atccggtgtc 240
 ggccgaggag ctgctggaat tgcgagccga catggccgca ggccggggct cggtcgacat 300
 caccgacggc gtgttctccc tcgccgagca cgaacgggtc ctggccgaca acgccgacga 360
 catcgccgcg ttccgttccc ggcaggcggc cgcgttctcc gcc 403

<210> 164
 <211> 336
 <212> DNA
 <213> Mycobacterium vaccae

<400> 164
 cggaccgcgt gggcgccgc cggcgagttc gaccgcgccc agaaagccgc gtcgaaggcc 60
 accgacgccc ataccgggga cctggtgctc tacgacggtg cgagcgggtc gacgtcccgt 120
 tcgctcgag cgtgtggaag gtcgacgtcg ccgtcggtga ccgggtggtg gccggacagc 180
 cgttgctggc gctggaggcg atgaagatgg agaccgtgct gcgcgccccg gccgacgggg 240
 tggtcaccca gatcctggtc tccgctgggc atctcgtcga tcccggcacc ccactggtcg 300
 tggtcggcac cggagtgcgc gcatgagcgc cgtcga 336

<210> 165
 <211> 134
 <212> PRT
 <213> Mycobacterium vaccae

<400> 165
 Asp Pro Arg His Arg Leu Val Thr Thr Lys Tyr Asn Pro Ala Arg Thr
 1 5 10 15
 Trp Thr Ala Glu Asn Ser Val Gly Ile Gly Gly Ala Tyr Leu Cys Ile
 20 25 30
 Tyr Gly Met Glu Gly Pro Gly Gly Tyr Gln Phe Val Gly Arg Thr Thr
 35 40 45
 Gln Val Trp Ser Arg Tyr Arg His Thr Ala Pro Phe Glu Pro Gly Ser
 50 55 60
 Pro Trp Leu Leu Arg Phe Phe Asp Arg Ile Ser Trp Tyr Pro Val Ser
 65 70 75 80
 Ala Glu Glu Leu Leu Glu Leu Arg Ala Asp Met Ala Ala Gly Arg Gly
 85 90 95
 Ser Val Asp Ile Thr Asp Gly Val Phe Ser Leu Ala Glu His Glu Arg
 100 105 110
 Phe Leu Ala Asp Asn Ala Asp Asp Ile Ala Ala Phe Arg Ser Arg Gln
 115 120 125
 Ala Ala Ala Phe Ser Ala
 130

<210> 166
 <211> 108
 <212> PRT

10051643-011302

<213> Mycobacterium vaccae

<400> 166

Arg Thr Ala Trp Ala Ala Ala Gly Glu Phe Asp Arg Ala Glu Lys Ala
1 5 10 15
Ala Ser Lys Ala Thr Asp Ala Asp Thr Gly Asp Leu Val Leu Tyr Asp
20 25 30
Gly Asp Glu Arg Val Asp Ala Pro Phe Ala Ser Ser Val Trp Lys Val
35 40 45
Asp Val Ala Val Gly Asp Arg Val Val Ala Gly Gln Pro Leu Leu Ala
50 55 60
Leu Glu Ala Met Lys Met Glu Thr Val Leu Arg Ala Pro Ala Asp Gly
65 70 75 80
Val Val Thr Gln Ile Leu Val Ser Ala Gly His Leu Val Asp Pro Gly
85 90 95
Thr Pro Leu Val Val Val Gly Thr Gly Val Arg Ala
100 105

<210> 167

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<400> 167

atagaattcg tccgacagtg ggacctcgag c

31

<210> 168

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<400> 168

atagaattcc caccgcggtca gccgccc

27

<210> 169

<211> 1111

<212> DNA

<213> Mycobacterium vaccae

<400> 169

gtccgacagt gggacctcga gcaccacgtc acaggacagc ggccccgcca gcggcgccct 60
gcgcgtctcc aactggccgc tctatatggc cgacggtttc atcgacagct tccagaccgc 120
ctcgggcacac acggtcgcact acaaagaaga cttcaacgac aacgagcagt ggttcgccaa 180
ggatcaaggag ccgttggtcgc gcaagcagga cataggcgcc gacctggtga tccccaccga 240
gttcattggcc gcgcgcgtca agggcctggg atgggtcaat gagatcagcg aagccggcgt 300
gcccaatcgc aagaatctgc gtcaggacct gttggactcg agcatcgacg agggccgcaa 360
gttcaccgcg ccgtacatga ccggcatggt cgggtctcgcc tacaacaagg cagccaccgg 420
acgcgatatc cgcaccatcg acgacctctg ggatcccgcg ttcaagggcc gcgtcagtct 480
gttctccgac gtccaggagc gcctcggcat gatcatgtc tcgcagggca actcgccgga 540
gaatccgacc accgagtgca ttcagcaggg ggtcgatctg gtccgcgaac agaacgacag 600
ggggtcagat ccgtcgcttc accggcaacg actacgccga cgacctggcc gcagaaacat 660

cgccatcgcg caggcggtact ccggtgacgt cgtgcagctg caggcggaca accccgatct 720
gcagttcatc gttcccgaat ccggcggcga ctggttcgtc gacacgatgg tgatcccgta 780
caccacgcag aaccagaagg ccgccgaggc gtggatcgac tacatctacg accgagccaa 840
ctacgccaag ctggtcgcgt tcacccagtt cgtgcccga ctctcggaca tgaccgacga 900
actcgccaag gtcgacccctg catcggcgga gaacccgctg atcaaccctg cggccgaggt 960
gcaggcgaac ctgaagtcgt gggcggcact gaccgacgag cagacgcagg agttcaacac 1020
tgcgtagcc gccgtcaccg gcggctgacg cgggtgtagt gccgatgcga ggggcataaa 1080
tggccctgcg gacgcgagga gcataaatgg c 1111

<210> 170
<211> 348
<212> PRT
<213> Mycobacterium vaccae

<400> 170

Ser Asp Ser Gly Thr Ser Ser Thr Thr Ser Gln Asp Ser Gly Pro Ala
1 5 10 15
Ser Gly Ala Leu Arg Val Ser Asn Trp Pro Leu Tyr Met Ala Asp Gly
20 25 30
Phe Ile Ala Ala Phe Gln Thr Ala Ser Gly Ile Thr Val Asp Tyr Lys
35 40 45
Glu Asp Phe Asn Asp Asn Glu Gln Trp Phe Ala Lys Val Lys Glu Pro
50 55 60
Leu Ser Arg Lys Gln Asp Ile Gly Ala Asp Leu Val Ile Pro Thr Glu
65 70 75 80
Phe Met Ala Ala Arg Val Lys Gly Leu Gly Trp Leu Asn Glu Ile Ser
85 90 95
Glu Ala Gly Val Pro Asn Arg Lys Asn Leu Arg Gln Asp Leu Leu Asp
100 105 110
Ser Ser Ile Asp Glu Gly Arg Lys Phe Thr Ala Pro Tyr Met Thr Gly
115 120 125
Met Val Gly Leu Ala Tyr Asn Lys Ala Ala Thr Gly Arg Asp Ile Arg
130 135 140
Thr Ile Asp Asp Leu Trp Asp Pro Ala Phe Lys Gly Arg Val Ser Leu
145 150 155 160
Phe Ser Asp Val Gln Asp Gly Leu Gly Met Ile Met Leu Ser Gln Gly
165 170 175
Asn Ser Pro Glu Asn Pro Thr Thr Glu Ser Ile Gln Gln Ala Val Asp
180 185 190
Leu Val Arg Glu Gln Asn Asp Arg Gly Gln Ile Arg Arg Phe Thr Gly
195 200 205
Asn Asp Tyr Ala Asp Asp Leu Ala Ala Gly Asn Ile Ala Ile Ala Gln
210 215 220
Ala Tyr Ser Gly Asp Val Val Gln Leu Gln Ala Asp Asn Pro Asp Leu
225 230 235 240
Gln Phe Ile Val Pro Glu Ser Gly Gly Asp Trp Phe Val Asp Thr Met
245 250 255
Val Ile Pro Tyr Thr Thr Gln Asn Gln Lys Ala Ala Glu Ala Trp Ile
260 265 270
Asp Tyr Ile Tyr Asp Arg Ala Asn Tyr Ala Lys Leu Val Ala Phe Thr
275 280 285
Gln Phe Val Pro Ala Leu Ser Asp Met Thr Asp Glu Leu Ala Lys Val
290 295 300
Asp Pro Ala Ser Ala Glu Asn Pro Leu Ile Asn Pro Ser Ala Glu Val
305 310 315 320
Gln Ala Asn Leu Lys Ser Trp Ala Ala Leu Thr Asp Glu Gln Thr Gln
325 330 335

10051643.011302

Glu Phe Asn Thr Ala Tyr Ala Ala Val Thr Gly Gly
340 345

<210> 171
<211> 1420
<212> DNA
<213> Mycobacterium vaccae

<220>
<221> unsure
<222> (955)...(955)

<221> unsure
<222> (973)...(973)

<400> 171

gatgagcagc	gtgctgaact	cgacctgggt	ggcctggggc	gtcgcggtcg	cggtcgggtt	60
cccggtgctg	ctggtcgtgc	tgaccgaggt	gcacaacgcg	ttgcgtcggc	gcggcagcgc	120
gctggccccg	ccggtgcaac	tctcgctac	ctacatcctg	ccgctggggc	cgttgctgct	180
cctgctggta	caggcgatgg	agatctccga	cgacgccacg	tcggtagcgt	tggtcgccac	240
cctgttcggc	gtcgtgttgt	tgacgttggt	gctgtccggg	ctcaacgcc	ccctcatcca	300
gggcgccacca	gaagacagct	ggcgcaggcg	gattccgtcg	atcttctctg	acgtcgcgcg	360
cttcgcgctg	atcgcggtcg	gtatcacctg	gatcatggcc	tatgtctggg	gcgcgaacgt	420
ggggggcctg	ttcaccgcac	tgggcgtcac	ttccatcggt	cttggcctgg	ctctgcagaa	480
ttcggtcggt	cagatcatct	cgggctctgt	gctgctgttc	gagcaaccgt	tccggctcgg	540
cgactggatc	accgtcccca	ccgcggcggg	ccggccgtcc	gcccacggcc	gcgtggtgga	600
agtcaactgg	cgtgcaaac	atatcgacac	cggcggcaac	ctgctggtaa	tgcccaacgc	660
cgaactcgcc	ggcgcgtcgt	tcaccaatta	cagccggccc	gtgggagagc	accggctgac	720
cgctgctacc	accttcaacg	ccgcggacac	ccccgatgat	gtctgcgaga	tgctgtcgtc	780
ggtcgcggcg	tcgctgcccg	aactgcgcac	cgacggacag	atcgccacgc	tctatctcgg	840
tgcgggccgaa	tacgagaagt	cgatcccgtt	gcacacaccc	gcgggtggacg	actcggtcag	900
gagcacgtac	ctgcatggg	tctggtacgc	cgcgcgcggg	caggaacttc	gcctnaacgg	960
cgctgcgcgac	ganttcgaca	cgccggaacg	gatcgccctg	gccatgcggg	ctgtggcgtc	1020
cacactgcgc	ttggcagacg	acgaacagca	ggagatcgcc	gacgtggtgc	gtctggtccg	1080
ttacggcaac	ggggaacgcc	tccagcagcc	gggtcaggta	ccgaccggga	tgaggttcat	1140
cgtagacggc	agggtgagtc	tgtccgtgat	cgatcaggac	ggcgacgtga	tcccggcgcg	1200
ggtgctcgag	cgtggcgact	tctgggggca	gaccacgctg	acgcgggaac	cggtactggc	1260
gaccgcgcac	gcgctggagg	aagtcaccgt	gctggagatg	gcccgtgacg	agatcgagcg	1320
cctggtgcac	cgaaagccga	tctgtctgca	cgtgatcggg	gccgtgatcg	ccgaccggcg	1380
cgcgcacgaa	cttcggttga	tggcggactc	gcaggactga			1420

<210> 172
<211> 471
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (318)...(318)

<221> UNSURE
<222> (324)...(324)

<400> 172

Met	Ser	Ser	Val	Leu	Asn	Ser	Thr	Trp	Leu	Ala	Trp	Ala	Val	Ala	Val
1				5				10					15		
Ala	Val	Gly	Phe	Pro	Val	Leu	Leu	Val	Val	Leu	Thr	Glu	Val	His	Asn

			20					25					30			
Ala	Leu	Arg	Arg	Arg	Gly	Ser	Ala	Leu	Ala	Arg	Pro	Val	Gln	Leu	Leu	
		35					40					45				
Arg	Thr	Tyr	Ile	Leu	Pro	Leu	Gly	Ala	Leu	Leu	Leu	Leu	Leu	Val	Gln	
	50					55					60					
Ala	Met	Glu	Ile	Ser	Asp	Asp	Ala	Thr	Ser	Val	Arg	Leu	Val	Ala	Thr	
65					70					75					80	
Leu	Phe	Gly	Val	Val	Leu	Leu	Thr	Leu	Val	Leu	Ser	Gly	Leu	Asn	Ala	
				85					90					95		
Thr	Leu	Ile	Gln	Gly	Ala	Pro	Glu	Asp	Ser	Trp	Arg	Arg	Arg	Ile	Pro	
			100					105					110			
Ser	Ile	Phe	Leu	Asp	Val	Ala	Arg	Phe	Ala	Leu	Ile	Ala	Val	Gly	Ile	
		115					120					125				
Thr	Val	Ile	Met	Ala	Tyr	Val	Trp	Gly	Ala	Asn	Val	Gly	Gly	Leu	Phe	
	130					135					140					
Thr	Ala	Leu	Gly	Val	Thr	Ser	Ile	Val	Leu	Gly	Leu	Ala	Leu	Gln	Asn	
145					150					155					160	
Ser	Val	Gly	Gln	Ile	Ile	Ser	Gly	Leu	Leu	Leu	Leu	Phe	Glu	Gln	Pro	
				165					170					175		
Phe	Arg	Leu	Gly	Asp	Trp	Ile	Thr	Val	Pro	Thr	Ala	Ala	Gly	Arg	Pro	
			180					185					190			
Ser	Ala	His	Gly	Arg	Val	Val	Glu	Val	Asn	Trp	Arg	Ala	Thr	His	Ile	
		195					200					205				
Asp	Thr	Gly	Gly	Asn	Leu	Leu	Val	Met	Pro	Asn	Ala	Glu	Leu	Ala	Gly	
	210					215					220					
Ala	Ser	Phe	Thr	Asn	Tyr	Ser	Arg	Pro	Val	Gly	Glu	His	Arg	Leu	Thr	
225				230						235					240	
Val	Val	Thr	Thr	Phe	Asn	Ala	Ala	Asp	Thr	Pro	Asp	Asp	Val	Cys	Glu	
				245					250					255		
Met	Leu	Ser	Ser	Val	Ala	Ala	Ser	Leu	Pro	Glu	Leu	Arg	Thr	Asp	Gly	
			260					265					270			
Gln	Ile	Ala	Thr	Leu	Tyr	Leu	Gly	Ala	Ala	Glu	Tyr	Glu	Lys	Ser	Ile	
		275					280					285				
Pro	Leu	His	Thr	Pro	Ala	Val	Asp	Asp	Ser	Val	Arg	Ser	Thr	Tyr	Leu	
	290					295					300					
Arg	Trp	Val	Trp	Tyr	Ala	Ala	Arg	Arg	Gln	Glu	Leu	Arg	Xaa	Asn	Gly	
305					310					315					320	
Val	Ala	Asp	Xaa	Phe	Asp	Thr	Pro	Glu	Arg	Ile	Ala	Ser	Ala	Met	Arg	
				325					330					335		
Ala	Val	Ala	Ser	Thr	Leu	Arg	Leu	Ala	Asp	Asp	Glu	Gln	Gln	Glu	Ile	
			340					345					350			
Ala	Asp	Val	Val	Arg	Leu	Val	Arg	Tyr	Gly	Asn	Gly	Glu	Arg	Leu	Gln	
		355					360					365				
Gln	Pro	Gly	Gln	Val	Pro	Thr	Gly	Met	Arg	Phe	Ile	Val	Asp	Gly	Arg	
	370					375</										

<210> 173
 <211> 2172
 <212> DNA
 <213> Mycobacterium vaccae

<400> 173

tagatgacaa	ttctgcccctg	gaatgcgcga	acgtctgaac	acccgacgcg	aaaaagacgc	60
gggcgctacc	acctcctgtc	gcggatgagc	atccagtgca	agttgctgct	gatgctgctt	120
ctgaccagca	ttctctcggc	tgcggtgggc	ggtttccatc	gctatcagtc	cggacgggtcc	180
tcgctgcgcg	catcgggtgt	cgaccgcctc	accgacatcc	gcgagtcgca	gtcgcgcggg	240
ttggagaatc	agttcgcgga	cctgaagaac	tcgatgggtga	tttactcgcg	cggcagcaact	300
gccacggagg	cgatcggcgc	gttcagcgcg	ggtttccgct	agctcggcga	tgcgacgatc	360
aataccgggc	aggcggcgct	attgcgcctg	tactacgacc	ggacgttcgc	caacaccacc	420
ctcgacgaca	gcggaacccg	cgtcgacgct	cgcgcgctca	tcccgaatc	caacccccag	480
cgctatctgc	aggcgtctca	taccccgccg	tttcagaact	gggagaaggc	gatcgcgttc	540
gacgacgcgc	gcgacggcag	cgcctggctg	gcccgaatg	ccagattcaa	cgagttcttc	600
cgcgagatcg	tgcaccgctt	caacttcgag	gatctgatgc	tgctcgacct	cgagggcaac	660
gtggtgtact	ccgcctacaa	ggggccggat	ctcgggacaa	acatcgtcaa	cggccccctat	720
cgcaaccggg	aactgtcggg	agcctacgag	aaggcggctg	cgtcgaactc	gatcgactat	780
gtcgggtgtca	ccgacttcgg	gtggtacctg	cctgcgcagg	aaccgaccgc	ctggttctctg	840
tccccggctg	gggtgaagga	ccgagtcgac	gggtgtgatg	cgggtccagt	cccgatcgcg	900
cggatcaacg	aattgatgac	ggcgcgggga	cagtggcgtg	acaccgggat	gggagacacc	960
ggtgagacca	tcctggtcgg	accggacaat	ctgatgcgct	cggactcccg	gctgttccgc	1020
gagaaccggg	agaagttcct	ggccgacgct	gtcgaggggg	gaaccccgcg	ggaggtcgcc	1080
gacgaatcgg	tgaccgcgg	cggcaccacg	ctggtgcagc	cggtgaccac	ccgctccgct	1140
gaggaggccc	aacgcggcaa	caccgggacg	acgatcgagg	acgactatct	cggccacgag	1200
gcgttacagg	cgtactcacc	ggtggacctg	cggggactgc	actgggtgat	cgtggccaag	1260
atcgacaccg	acgaggcggt	cgccccgggt	gcgcagttca	ccaggaccct	ggtgctgtcg	1320
acggtgatca	tcattctcgg	cgtgtcgcgt	gcggccatgc	tgctggcgcg	gttggttcgtc	1380
cgtccgatcc	ggcggttgca	ggccggcgcc	cagcagatca	gcggcgggtga	ctaccgcctc	1440
gctctgccgg	tgttgctctg	tgacgaattc	ggcgatctga	caacagcttt	caacgacatg	1500
agtcgcaatc	tgatgatcaa	ggacgagctg	ctcggcgagg	agcgcgccga	gaaccaacgg	1560
ctgatgctgt	ccctgatgcc	cgaaccgggt	atgcagcgct	acctcgacgg	ggaggagacg	1620
atcgcccagg	accacaagaa	cgtcacgggt	atcttcgctg	acatgatggg	cctcgacgag	1680
ttgtcgcgca	tgttgacctc	cgaggaaact	atggtgggtg	tcaacgacct	gaccgccag	1740
ttcgacgcgg	cgcgcgagag	tctcgggggt	gaccacgtgc	ggacgctgca	cgacgggtac	1800
ctggccagct	gcgggttagg	cgtgccgcgg	ctggacaacg	tccggcgcac	ggtcaatttc	1860
gcgatcga	tggaccgcat	catcgaccgg	cacgcgcgcg	agtcggggca	cgacctgcgg	1920
ctccgcgcgg	gcacgcgac	cgggtcggcg	gccagcgggc	tgggtggggcg	gtccacgttg	1980
gcgtacgaca	tgtgggggtt	ggcggtcgat	gtcgctaacc	aggtgcagcg	cggctcccc	2040
cagcccgcca	tctacgtcac	ctcgcgggtg	cacgaggtca	tgcaggaaac	tctcgacttc	2100
gtcgcgcgg	gggaggtcgt	cggcgagcgc	ggcgtcgaga	cggctcggcg	ggtgcagggc	2160
caccggcgat	ga					2172

<210> 174
 <211> 722
 <212> PRT
 <213> Mycobacterium vaccae

<400> 174

Met	Thr	Ile	Leu	Pro	Trp	Asn	Ala	Arg	Thr	Ser	Glu	His	Pro	Thr	Arg
1				5					10					15	
Lys	Arg	Arg	Gly	Arg	Tyr	His	Leu	Leu	Ser	Arg	Met	Ser	Ile	Gln	Ser
			20				25						30		
Lys	Leu	Leu	Leu	Met	Leu	Leu	Leu	Thr	Ser	Ile	Leu	Ser	Ala	Ala	Val
	35						40					45			

Val	Gly	Phe	Ile	Gly	Tyr	Gln	Ser	Gly	Arg	Ser	Ser	Leu	Arg	Ala	Ser	50	55	60
Val	Phe	Asp	Arg	Leu	Thr	Asp	Ile	Arg	Glu	Ser	Gln	Ser	Arg	Gly	Leu	65	70	75
Glu	Asn	Gln	Phe	Ala	Asp	Leu	Lys	Asn	Ser	Met	Val	Ile	Tyr	Ser	Arg	85	90	95
Gly	Ser	Thr	Ala	Thr	Glu	Ala	Ile	Gly	Ala	Phe	Ser	Asp	Gly	Phe	Arg	100	105	110
Gln	Leu	Gly	Asp	Ala	Thr	Ile	Asn	Thr	Gly	Gln	Ala	Ala	Ser	Leu	Arg	115	120	125
Arg	Tyr	Tyr	Asp	Arg	Thr	Phe	Ala	Asn	Thr	Thr	Leu	Asp	Asp	Ser	Gly	130	135	140
Asn	Arg	Val	Asp	Val	Arg	Ala	Leu	Ile	Pro	Lys	Ser	Asn	Pro	Gln	Arg	145	150	155
Tyr	Leu	Gln	Ala	Leu	Tyr	Thr	Pro	Pro	Phe	Gln	Asn	Trp	Glu	Lys	Ala	165	170	175
Ile	Ala	Phe	Asp	Asp	Ala	Arg	Asp	Gly	Ser	Ala	Trp	Ser	Ala	Ala	Asn	180	185	190
Ala	Arg	Phe	Asn	Glu	Phe	Phe	Arg	Glu	Ile	Val	His	Arg	Phe	Asn	Phe	195	200	205
Glu	Asp	Leu	Met	Leu	Leu	Asp	Leu	Glu	Gly	Asn	Val	Val	Tyr	Ser	Ala	210	215	220
Tyr	Lys	Gly	Pro	Asp	Leu	Gly	Thr	Asn	Ile	Val	Asn	Gly	Pro	Tyr	Arg	225	230	235
Asn	Arg	Glu	Leu	Ser	Glu	Ala	Tyr	Glu	Lys	Ala	Val	Ala	Ser	Asn	Ser	245	250	255
Ile	Asp	Tyr	Val	Gly	Val	Thr	Asp	Phe	Gly	Trp	Tyr	Leu	Pro	Ala	Glu	260	265	270
Glu	Pro	Thr	Ala	Trp	Phe	Leu	Ser	Pro	Val	Gly	Leu	Lys	Asp	Arg	Val	275	280	285
Asp	Gly	Val	Met	Ala	Val	Gln	Phe	Pro	Ile	Ala	Arg	Ile	Asn	Glu	Leu	290	295	300
Met	Thr	Ala	Arg	Gly	Gln	Trp	Arg	Asp	Thr	Gly	Met	Gly	Asp	Thr	Gly	305	310	315
Glu	Thr	Ile	Leu	Val	Gly	Pro	Asp	Asn	Leu	Met	Arg	Ser	Asp	Ser	Arg	325	330	335
Leu	Phe	Arg	Glu	Asn	Arg	Glu	Lys	Phe	Leu	Ala	Asp	Val	Val	Glu	Gly	340	345	350
Gly	Thr	Pro	Pro	Glu	Val	Ala	Asp	Glu	Ser	Val	Asp	Arg	Arg	Gly	Thr	355	360	365
Thr	Leu	Val	Gln	Pro	Val	Thr	Thr	Arg	Ser	Val	Glu	Glu	Ala	Gln	Arg	370	375	380
Gly	Asn	Thr	Gly	Thr	Thr	Ile	Glu	Asp	Asp	Tyr	Leu	Gly	His	Glu	Ala	385	390	395
Leu	Gln	Ala	Tyr	Ser	Pro	Val	Asp	Leu	Pro	Gly	Leu	His	Trp	Val	Ile	405	410	415
Val	Ala	Lys	Ile	Asp	Thr	Asp	Glu	Ala	Phe	Ala	Pro	Val	Ala	Gln	Phe	420	425	430
Thr	Arg	Thr	Leu	Val	Leu	Ser	Thr	Val	Ile	Ile	Ile	Phe	Gly	Val	Ser	435	440	445
Leu	Ala	Ala	Met	Leu	Leu	Ala	Arg	Leu	Phe	Val	Arg	Pro	Ile	Arg	Arg	450	455	460
Leu	Gln	Ala	Gly	Ala	Gln	Gln	Ile	Ser	Gly	Gly	Asp	Tyr	Arg	Leu	Ala	465	470	475
Leu	Pro	Val	Leu	Ser	Arg	Asp	Glu	Phe	Gly	Asp	Leu	Thr	Thr	Ala	Phe	485	490	495
Asn	Asp	Met	Ser	Arg	Asn	Leu	Ser	Ile	Lys	Asp	Glu	Leu	Leu	Gly	Glu			


```

<400> 176
ggctatcagt ccggacggtc ctcgctgcgc gcacgcgtgt tcgaccgcct caccgacatc      60
cgcgagtcgc agtcgcgcgc gttggagaat cagttcgcgc acctgaagaa ctcgatgggtg      120
atttactcgc gcgcgacgac tgccacggag gcgatcggcg cgttcagcga cggtttccgt      180
cagctcggcg atgcgacgat caataccggg caggcggcgt cattgcgccg ttactacgac      240
cggacgttcg ccaacaccac cctcgacgac agcggaaacc gcgtcgacgt ccgcgcgctc      300
atcccgaat ccaacccccca gcgctatctg caggcgctct ataccccgcc gtttcagaac      360
tgggagaagg cgatcgcggt cgacgacgcg cgcgacggca gcgcctgggt ggccgccaat      420
gccagattca acgagttctt ccgcgagatc gtgcaccgct tcaacttcga ggatctgatg      480
ctgctcgacc tcgagggcaa cgtggtgtac tccgcctaca aggggcccga tctcgggaca      540
aacatcgta acggccccta tcgcaaccgg gaactgtcgg aagcctacga gaaggcgggtc      600
gcgtcgaact cgatcgacta tgtcgggtgt accgacttcg ggtggtacct gcctgccgag      660
gaaccgaccg cctggttctt gtccccgggt ggggtgaagg accgagtcga cgggtgtgatg      720
gcggtccagt tcccgatcgc gcgatcaac gaattgatga cggcgcgggg acagtggcgt      780
gacaccggga tgggagacac cggtgagacc atcctggtcg gaccggacaa tctgatgcgc      840
tcggactccc ggctgttccg cgagaaccgg gagaagttcc tggccgacgt cgtcgagggg      900
ggaacccgcg cggaggtcgc cgacgaatcg gttgaccgcc gcggcaccac gctggtgcag      960
ccggtgacca cccgctccgt cgaggaggcc caacgcggca acaccgggac gacgatcgag      1020
gacgactatc tcggccacga ggcgttacag gcgtactcac cgggtggacct gccgggactg      1080
cactgggtga tcgtggccaa gatcgacacc gacgaggcgt tcgcccgggt ggcgagttc      1140
accaggaccc tgggtgctgtc gacggtgatc atcatcttcg gcgtgtcgtt ggcgcccatg      1200
ctgctggcgc ggttggttcgt ccgtccgatc cggcggttgc aggcggcgcg ccagcagatc      1260
agcggcggtg actaccgcct cgctctgcgc gtgttgtctc gtgacgaatt cggcgatctg      1320
acaacagctt tcaacgacat gagtcgaat ctgtcgatca aggacgagct gctcggcgag      1380
gagcgcgccg agaaccaacg gctgatgctg tccctgatgc ccgaaccggt gatgcagcg      1440
tacctcgacg gggaggagac gatcgcccag gaccacaaga acgtcacggt gatcttcgcc      1500
gacatgatgg gcctcgacga gttgtcgcgc atgttgacct ccgaggaact gatggtggtg      1560
gtcaacgacc tgacccgcca gttcgacgcc gccgcgcgaga gtctcggggt cgaccacgtg      1620
cggacgctgc acgacgggta cctggccagc tcggggttag gcgtgccgcg gctggacaac      1680
gtcggcgca cgggtcaattt cgcgatcgaa atggaccgca tcatcgaccg gcacgccgcc      1740
gagtcggggc acgacctgcg gctcgcgcgc ggcacgcgca ccgggtcggc ggccagcggg      1800
ctggtggggc ggtccacggt ggcgtagcac atgtggggtt cggcggtcga tgtcgtaac      1860
caggtgcagc gcggtcccc ccagcccggc atctacgtca cctcgcgggt gcacgaggtc      1920
atgcaggaaa ctctcgactt cgtcgcgcgc ggggaggtcg tcggcgagcg cggcgtcgag      1980
acggtctggc ggttgacggg ccaccggcga tga                                     2013

```

```

<210> 177
<211> 297
<212> PRT
<213> Mycobacterium vaccae

```

```

<220>
<221> UNSURE
<222> (145)...(145)

```

```

<221> UNSURE
<222> (151)...(151)

```

```

<400> 177
Glu Gln Pro Phe Arg Leu Gly Asp Trp Ile Thr Val Pro Thr Ala Ala
 1             5             10             15
Gly Arg Pro Ser Ala His Gly Arg Val Val Glu Val Asn Trp Arg Ala
          20          25          30
Thr His Ile Asp Thr Gly Gly Asn Leu Leu Val Met Pro Asn Ala Glu
          35          40          45
Leu Ala Gly Ala Ser Phe Thr Asn Tyr Ser Arg Pro Val Gly Glu His
 50             55             60

```

Arg	Leu	Thr	Val	Val	Thr	Thr	Phe	Asn	Ala	Ala	Asp	Thr	Pro	Asp	Asp
65					70					75					80
Val	Cys	Glu	Met	Leu	Ser	Ser	Val	Ala	Ala	Ser	Leu	Pro	Glu	Leu	Arg
				85					90					95	
Thr	Asp	Gly	Gln	Ile	Ala	Thr	Leu	Tyr	Leu	Gly	Ala	Ala	Glu	Tyr	Glu
			100					105					110		
Lys	Ser	Ile	Pro	Leu	His	Thr	Pro	Ala	Val	Asp	Asp	Ser	Val	Arg	Ser
		115					120					125			
Thr	Tyr	Leu	Arg	Trp	Val	Trp	Tyr	Ala	Ala	Arg	Arg	Gln	Glu	Leu	Arg
		130				135					140				
Xaa	Asn	Gly	Val	Ala	Asp	Xaa	Phe	Asp	Thr	Pro	Glu	Arg	Ile	Ala	Ser
145					150					155					160
Ala	Met	Arg	Ala	Val	Ala	Ser	Thr	Leu	Arg	Leu	Ala	Asp	Asp	Glu	Gln
				165					170					175	
Gln	Glu	Ile	Ala	Asp	Val	Val	Arg	Leu	Val	Arg	Tyr	Gly	Asn	Gly	Glu
		180						185					190		
Arg	Leu	Gln	Gln	Pro	Gly	Gln	Val	Pro	Thr	Gly	Met	Arg	Phe	Ile	Val
		195					200					205			
Asp	Gly	Arg	Val	Ser	Leu	Ser	Val	Ile	Asp	Gln	Asp	Gly	Asp	Val	Ile
		210				215					220				
Pro	Ala	Arg	Val	Leu	Glu	Arg	Gly	Asp	Phe	Leu	Gly	Gln	Thr	Thr	Leu
225					230					235					240
Thr	Arg	Glu	Pro	Val	Leu	Ala	Thr	Ala	His	Ala	Leu	Glu	Glu	Val	Thr
				245					250					255	
Val	Leu	Glu	Met	Ala	Arg	Asp	Glu	Ile	Glu	Arg	Leu	Val	His	Arg	Lys
			260					265					270		
Pro	Ile	Leu	Leu	His	Val	Ile	Gly	Ala	Val	Ala	Asp	Arg	Arg	Ala	His
		275					280					285			
Glu	Leu	Arg	Leu	Met	Asp	Ser	Gln	Asp							
		290				295									

<210> 178

<211> 670

<212> PRT

<213> Mycobacterium vaccae

<400> 178

Gly	Tyr	Gln	Ser	Gly	Arg	Ser	Ser	Leu	Arg	Ala	Ser	Val	Phe	Asp	Arg
1				5				10					15		
Leu	Thr	Asp	Ile	Arg	Glu	Ser	Gln	Ser	Arg	Gly	Leu	Glu	Asn	Gln	Phe
			20					25					30		
Ala	Asp	Leu	Lys	Asn	Ser	Met	Val	Ile	Tyr	Ser	Arg	Gly	Ser	Thr	Ala
		35				40						45			
Thr	Glu	Ala	Ile	Gly	Ala	Phe	Ser	Asp	Gly	Phe	Arg	Gln	Leu	Gly	Asp
		50				55					60				
Ala	Thr	Ile	Asn	Thr	Gly	Gln	Ala	Ala	Ser	Leu	Arg	Arg	Tyr	Tyr	Asp
65				70						75					80
Arg	Thr	Phe	Ala	Asn	Thr	Thr	Leu	Asp	Asp	Ser	Gly	Asn	Arg	Val	Asp
			85						90					95	
Val	Arg	Ala	Leu	Ile	Pro	Lys	Ser	Asn	Pro	Gln	Arg	Tyr	Leu	Gln	Ala
			100					105					110		
Leu	Tyr	Thr	Pro	Pro	Phe	Gln	Asn	Trp	Glu	Lys	Ala	Ile	Ala	Phe	Asp
		115					120					125			
Asp	Ala	Arg	Asp	Gly	Ser	Ala	Trp	Ser	Ala	Ala	Asn	Ala	Arg	Phe	Asn
		130				135					140				
Glu	Phe	Phe	Arg	Glu	Ile	Val	His	Arg	Phe	Asn	Phe	Glu	Asp	Leu	Met
145					150					155					160

Leu	Leu	Asp	Leu	Glu	Gly	Asn	Val	Val	Tyr	Ser	Ala	Tyr	Lys	Gly	Pro
				165					170					175	
Asp	Leu	Gly	Thr	Asn	Ile	Val	Asn	Gly	Pro	Tyr	Arg	Asn	Arg	Glu	Leu
			180					185					190		
Ser	Glu	Ala	Tyr	Glu	Lys	Ala	Val	Ala	Ser	Asn	Ser	Ile	Asp	Tyr	Val
		195					200					205			
Gly	Val	Thr	Asp	Phe	Gly	Trp	Tyr	Leu	Pro	Ala	Glu	Glu	Pro	Thr	Ala
	210					215					220				
Trp	Phe	Leu	Ser	Pro	Val	Gly	Leu	Lys	Asp	Arg	Val	Asp	Gly	Val	Met
225					230					235					240
Ala	Val	Gln	Phe	Pro	Ile	Ala	Arg	Ile	Asn	Glu	Leu	Met	Thr	Ala	Arg
			245						250					255	
Gly	Gln	Trp	Arg	Asp	Thr	Gly	Met	Gly	Asp	Thr	Gly	Glu	Thr	Ile	Leu
		260						265					270		
Val	Gly	Pro	Asp	Asn	Leu	Met	Arg	Ser	Asp	Ser	Arg	Leu	Phe	Arg	Glu
		275					280					285			
Asn	Arg	Glu	Lys	Phe	Leu	Ala	Asp	Val	Val	Glu	Gly	Gly	Thr	Pro	Pro
	290					295					300				
Glu	Val	Ala	Asp	Glu	Ser	Val	Asp	Arg	Arg	Gly	Thr	Thr	Leu	Val	Gln
305					310					315					320
Pro	Val	Thr	Thr	Arg	Ser	Val	Glu	Glu	Ala	Gln	Arg	Gly	Asn	Thr	Gly
				325					330					335	
Thr	Thr	Ile	Glu	Asp	Asp	Tyr	Leu	Gly	His	Glu	Ala	Leu	Gln	Ala	Tyr
		340						345					350		
Ser	Pro	Val	Asp	Leu	Pro	Gly	Leu	His	Trp	Val	Ile	Val	Ala	Lys	Ile
		355					360					365			
Asp	Thr	Asp	Glu	Ala	Phe	Ala	Pro	Val	Ala	Gln	Phe	Thr	Arg	Thr	Leu
	370					375					380				
Val	Leu	Ser	Thr	Val	Ile	Ile	Ile	Phe	Gly	Val	Ser	Leu	Ala	Ala	Met
385					390					395					400
Leu	Leu	Ala	Arg	Leu	Phe	Val	Arg	Pro	Ile	Arg	Arg	Leu	Gln	Ala	Gly
				405					410					415	
Ala	Gln	Gln	Ile	Ser	Gly	Gly	Asp	Tyr	Arg	Leu	Ala	Leu	Pro	Val	Leu
		420						425					430		
Ser	Arg	Asp	Glu	Phe	Gly	Asp	Leu	Thr	Thr	Ala	Phe	Asn	Asp	Met	Ser
		435					440					445			
Arg	Asn	Leu	Ser	Ile	Lys	Asp	Glu	Leu	Leu	Gly	Glu	Glu	Arg	Ala	Glu
	450					455					460				
Asn	Gln	Arg	Leu	Met	Leu	Ser	Leu	Met	Pro	Glu	Pro	Val	Met	Gln	Arg
465					470					475					480
Tyr	Leu	Asp	Gly	Glu	Glu	Thr	Ile	Ala	Gln	Asp	His	Lys	Asn	Val	Thr
			485						490					495	
Val	Ile	Phe	Ala	Asp	Met	Met	Gly	Leu	Asp	Glu	Leu	Ser	Arg	Met	Leu
		500						505					510		
Thr	Ser	Glu	Glu	Leu	Met	Val	Val	Val	Asn	Asp	Leu	Thr	Arg	Gln	Phe
	515						520						525		
Asp	Ala	Ala	Ala	Glu	Ser	Leu	Gly	Val	Asp	His	Val	Arg	Thr	Leu	His
	530					535					540				
Asp	Gly	Tyr	Leu	Ala	Ser	Cys	Gly	Leu	Gly	Val	Pro	Arg	Leu	Asp	Asn
545					550					555					560
Val	Arg	Arg	Thr	Val	Asn	Phe	Ala	Ile	Glu	Met	Asp	Arg	Ile	Ile	Asp
			565						570					575	
Arg	His	Ala	Ala	Glu	Ser	Gly	His	Asp	Leu	Arg	Leu	Arg	Ala	Gly	Ile
		580						585					590		
Asp	Thr	Gly	Ser	Ala	Ala	Ser	Gly	Leu	Val	Gly	Arg	Ser	Thr	Leu	Ala
	595						600					605			
Tyr	Asp	Met	Trp	Gly	Ser	Ala	Val	Asp	Val	Ala	Asn	Gln	Val	Gln	Arg

610 615 620
 Gly Ser Pro Gln Pro Gly Ile Tyr Val Thr Ser Arg Val His Glu Val
 625 630 635 640
 Met Gln Glu Thr Leu Asp Phe Val Ala Ala Gly Glu Val Val Gly Glu
 645 650 655
 Arg Gly Val Glu Thr Val Trp Arg Leu Gln Gly His Arg Arg
 660 665 670

<210> 179
 <211> 520
 <212> DNA
 <213> Mycobacterium vaccae

<400> 179
 gtgatcgacg aaaccctctt ccatgccgag gagaagatgg agaaggccgt ctcggtggca 60
 cccgacgacc tggcgctgat tcgtaccggc cgcgcgaacc ccggcatgtt caaccggatc 120
 aacatcgact actacggcgc ctccaccccg atcacgcagc tgtccagcat caacgtgccc 180
 gaggcgcgca tgggtggtgat caagccctac gaggcgagcc agctgcgcct catcgaggat 240
 gcgatccgca actccgacct cggcgctcaat ccgaccaacg acggcaacat catccgggtg 300
 tcgatcccgc agctcaccga ggagcgccgc cgcgacctgg tcaagcaggc caaggccaag 360
 ggcgaggacg ccaaggtgtc ggtgcgcaac atccgtcgca acgatatgaa cacctttcgc 420
 atcgaccggg tacggctgcc gacgccaccg ccgtcgtaga agcgacagag gatcgcgaggt 480
 aacggtattg gccacgcctt ctgtggcggg ccgacaccac 520

<210> 180
 <211> 1071
 <212> DNA
 <213> Mycobacterium vaccae

<400> 180
 cgtggggaag gattgcactc tatgagcgaa atcgcccgtc cctggcggggt tctggcaggt 60
 ggcacgcggt cctgcgcgcg gggatatgcc ggggtgctga gcatcgcggt caccacggcg 120
 tcggcccagc cgggcctccc gcagcccccg ctgcccgcgc ctgccacagt gacgcaaacc 180
 gtcacggttg cgcaccaacgc cgcgccacaa ctcatcccgc gcccgggtgt gacgcctgcc 240
 accggcgggc accgcgcggg gccgcgcggg gtgagcgccc cggcggtcgc gccggcccc 300
 gcgctgcccg ccgcgccggg gtccacgata ccccggcca cctcgggcac gctcagcgag 360
 ttcttcgccc ccaaggggcgt cacgatggag ccgcagtcca gccgcgactt ccgcgccctc 420
 aacatcgtgc tgccgaagcc gcggggctgg gagcacatcc cggaccgaa cgtgccggac 480
 gcgttcgcgg tgctggccga ccgggtcggc ggcaacggcc tgtactcgtc gaacgcccag 540
 gtggtggtct acaaactcgt cggcgagttc gaccccaagg aagcgatcag ccacggcttc 600
 gtcgacagcc agaagctgcc ggcgtggcgt tccaccgacg cgtcgctggc cgacttcggc 660
 ggaatgccgt cctcgctgat cgagggcacc taccgcgaga acaacatgaa gctgaacacg 720
 tcccggcgcc acgtcattgc caccgcgggg cccgaccact acctggtgtc gctgtcggtg 780
 accaccagcg tcgaacaggc cgtggccgaa gccgcggagg ccaccgacgc gattgtcaac 840
 ggcttcaagg tcagcgttcc gggtcggggg ccggccgcac cgccacctgc acccggtgcc 900
 cccggtgtcc cgcgcccccc cggcgccccg gcgctgcgc tggcgcgtcg accacccccg 960
 gctcccgtct ttcccgcggt ggcgccccgc ccacagctgc tgggactgca gggatagacg 1020
 tcgtcgtccc ccgggcgaag cctggcgccc gggggacgac ggcccccttc t 1071

<210> 181
 <211> 152
 <212> PRT
 <213> Mycobacterium vaccae

<400> 181
 Val Ile Asp Glu Thr Leu Phe His Ala Glu Glu Lys Met Glu Lys Ala
 1 5 10 15

Val	Ser	Val	Ala	Pro	Asp	Asp	Leu	Ala	Ser	Ile	Arg	Thr	Gly	Arg	Ala
			20					25					30		
Asn	Pro	Gly	Met	Phe	Asn	Arg	Ile	Asn	Ile	Asp	Tyr	Tyr	Gly	Ala	Ser
		35					40					45			
Thr	Pro	Ile	Thr	Gln	Leu	Ser	Ser	Ile	Asn	Val	Pro	Glu	Ala	Arg	Met
		50				55					60				
Val	Val	Ile	Lys	Pro	Tyr	Glu	Ala	Ser	Gln	Leu	Arg	Leu	Ile	Glu	Asp
65					70					75				80	
Ala	Ile	Arg	Asn	Ser	Asp	Leu	Gly	Val	Asn	Pro	Thr	Asn	Asp	Gly	Asn
			85						90					95	
Ile	Ile	Arg	Val	Ser	Ile	Pro	Gln	Leu	Thr	Glu	Glu	Arg	Arg	Arg	Asp
			100					105					110		
Leu	Val	Lys	Gln	Ala	Lys	Ala	Lys	Gly	Glu	Asp	Ala	Lys	Val	Ser	Val
		115					120					125			
Arg	Asn	Ile	Arg	Arg	Asn	Asp	Met	Asn	Thr	Phe	Arg	Ile	Ala	Pro	Val
	130					135					140				
Arg	Leu	Pro	Thr	Pro	Pro	Pro	Ser								
145						150									

<210> 182
 <211> 331
 <212> PRT
 <213> Mycobacterium vaccae

<400> 182

Met	Ser	Glu	Ile	Ala	Arg	Pro	Trp	Arg	Val	Leu	Ala	Gly	Gly	Ile	Gly
1				5					10					15	
Ala	Cys	Ala	Ala	Gly	Ile	Ala	Gly	Val	Leu	Ser	Ile	Ala	Val	Thr	Thr
		20						25					30		
Ala	Ser	Ala	Gln	Pro	Gly	Leu	Pro	Gln	Pro	Pro	Leu	Pro	Ala	Pro	Ala
		35					40					45			
Thr	Val	Thr	Gln	Thr	Val	Thr	Val	Ala	Pro	Asn	Ala	Ala	Pro	Gln	Leu
	50					55					60				
Ile	Pro	Arg	Pro	Gly	Val	Thr	Pro	Ala	Thr	Gly	Gly	Ala	Ala	Ala	Val
65					70					75				80	
Pro	Ala	Gly	Val	Ser	Ala	Pro	Ala	Val	Ala	Pro	Ala	Pro	Ala	Leu	Pro
				85					90					95	
Ala	Arg	Pro	Val	Ser	Thr	Ile	Ala	Pro	Ala	Thr	Ser	Gly	Thr	Leu	Ser
			100					105					110		
Glu	Phe	Phe	Ala	Ala	Lys	Gly	Val	Thr	Met	Glu	Pro	Gln	Ser	Ser	Arg
		115					120					125			
Asp	Phe	Arg	Ala	Leu	Asn	Ile	Val	Leu	Pro	Lys	Pro	Arg	Gly	Trp	Glu
	130					135					140				
His	Ile	Pro	Asp	Pro	Asn	Val	Pro	Asp	Ala	Phe	Ala	Val	Leu	Ala	Asp
145					150					155				160	
Arg	Val	Gly	Gly	Asn	Gly	Leu	Tyr	Ser	Ser	Asn	Ala	Gln	Val	Val	Val
				165					170					175	
Tyr	Lys	Leu	Val	Gly	Glu	Phe	Asp	Pro	Lys	Glu	Ala	Ile	Ser	His	Gly
			180					185					190		
Phe	Val	Asp	Ser	Gln	Lys	Leu	Pro	Ala	Trp	Arg	Ser	Thr	Asp	Ala	Ser
		195					200					205			
Leu	Ala	Asp	Phe	Gly	Gly	Met	Pro	Ser	Ser	Leu	Ile	Glu	Gly	Thr	Tyr
		210				215					220				
Arg	Glu	Asn	Asn	Met	Lys	Leu	Asn	Thr	Ser	Arg	Arg	His	Val	Ile	Ala
225					230					235				240	
Thr	Ala	Gly	Pro	Asp	His	Tyr	Leu	Val	Ser	Leu	Ser	Val	Thr	Thr	Ser
				245					250					255	

10051643-011802

Val Glu Gln Ala Val Ala Glu Ala Ala Glu Ala Thr Asp Ala Ile Val
260 265 270
Asn Gly Phe Lys Val Ser Val Pro Gly Pro Gly Pro Ala Ala Pro Pro
275 280 285
Pro Ala Pro Gly Ala Pro Gly Val Pro Pro Ala Pro Gly Ala Pro Ala
290 295 300
Leu Pro Leu Ala Val Ala Pro Pro Pro Ala Pro Ala Val Pro Ala Val
305 310 315 320
Ala Pro Ala Pro Gln Leu Leu Gly Leu Gln Gly
325 330

<210> 183
<211> 207
<212> DNA
<213> Mycobacterium vaccae

<400> 183
acctacgagt tgcgagaacaa gggtcacgggc ggccgcgcatcc cgcgcgagta catcccgtcg 60
gtggatgccg ggcgcgagga cgccatgcag tacggcgtgc tggccggcta cccgctggtt 120
aacgtcaagc tgacgtgtct cgacgggtgcc taccacgaag tcgactcgtc ggaaatggca 180
ttcaaggttg ccggtcctcca ggtcata 207

<210> 184
<211> 69
<212> PRT
<213> Mycobacterium vaccae

<400> 184
Thr Tyr Glu Phe Glu Asn Lys Val Thr Gly Gly Arg Ile Pro Arg Glu
1 5 10 15
Tyr Ile Pro Ser Val Asp Ala Gly Ala Gln Asp Ala Met Gln Tyr Gly
20 25 30
Val Leu Ala Gly Tyr Pro Leu Val Asn Val Lys Leu Thr Leu Leu Asp
35 40 45
Gly Ala Tyr His Glu Val Asp Ser Ser Glu Met Ala Phe Lys Val Ala
50 55 60
Gly Ser Gln Val Ile
65

<210> 185
<211> 898
<212> DNA
<213> Mycobacterium vaccae

<220>
<221> unsure
<222> (637)...(637)

<221> unsure
<222> (662)...(662)

<400> 185
cgacctccac ccggggcgtga ggccaaccac taggctggtc accagtagtc gacggcacac 60
ttcaccgaaa aaatgaggac agaggagaca cccgtgacga tccgtgttgg tgtgaacggc 120
ttcgccgta tcggacgcaa cttcttccgc gcgctggacg cgcagaaggc cgaaggcaag 180
aacaaggaca tcgagatcgt cgcggtcaac gacctcaccg acaacgccac gctggcgcac 240
ctgctgaagt tcgactcgat cctggggccgg ctgccctacg acgtgagcct cgaaggcgag 300

10051643-011802

gacaccatcg tcgtcggcag caccaagatc aaggcgctcg aggtcaagga agggccggcg 360
gcgctgccct ggggcgacct gggcgtcgac gtcgtcgtcg agtccaccgg catcttcacc 420
aagcgcgaca agggccaggg ccacctcgac gcggggcgcca agaaggatcat catctccgcg 480
ccggccaccg atgaggacat caccatcgtg ctccggcgtca acgacgacaa gtacgacggc 540
agccagaaca tcatctccaa cgcgtcgtgc accacgaact gcctcggccc gctggcgaag 600
gtcatcaacg acgagttcgg catcgtcaag ggcctgntga ccaccatcca cgcctacacc 660
cnggtccaga acctgcagga cggcccgac aaggatctgc gccggggccc cgccgcccgcg 720
ctgaacatcg tgccgacctc caccggtgcc gccaaaggcca tcggactggg gctgcccagag 780
ctgaagggca agctcgacgg ctacgcgctg cgggtgccga tccccaccgg ctcggtcacc 840
gacctgaccg ccgagctggg caagtcggcc accgtggacg agatcaacgc cgcatga 898

<210> 186
<211> 268
<212> PRT
<213> *Mycobacterium vaccae*

<220>
<221> UNSURE
<222> (182)...(182)

<221> UNSURE
<222> (190)...(190)

<400> 186

Val	Thr	Ile	Arg	Val	Gly	Val	Asn	Gly	Phe	Gly	Arg	Ile	Gly	Arg	Asn
1				5					10					15	
Phe	Phe	Arg	Ala	Leu	Asp	Ala	Gln	Lys	Ala	Glu	Gly	Lys	Asn	Lys	Asp
			20					25					30		
Ile	Glu	Ile	Val	Ala	Val	Asn	Asp	Leu	Thr	Asp	Asn	Ala	Thr	Leu	Ala
		35				40						45			
His	Leu	Leu	Lys	Phe	Asp	Ser	Ile	Leu	Gly	Arg	Leu	Pro	Tyr	Asp	Val
	50					55					60				
Ser	Leu	Glu	Gly	Glu	Asp	Thr	Ile	Val	Val	Gly	Ser	Thr	Lys	Ile	Lys
	65				70					75					80
Ala	Leu	Glu	Val	Lys	Glu	Gly	Pro	Ala	Ala	Leu	Pro	Trp	Gly	Asp	Leu
			85					90					95		
Gly	Val	Asp	Val	Val	Val	Glu	Ser	Thr	Gly	Ile	Phe	Thr	Lys	Arg	Asp
			100					105					110		
Lys	Ala	Gln	Gly	His	Leu	Asp	Ala	Gly	Ala	Lys	Lys	Val	Ile	Ile	Ser
		115					120					125			
Ala	Pro	Ala	Thr	Asp	Glu	Asp	Ile	Thr	Ile	Val	Leu	Gly	Val	Asn	Asp
	130					135				140					
Asp	Lys	Tyr	Asp	Gly	Ser	Gln	Asn	Ile	Ile	Ser	Asn	Ala	Ser	Cys	Thr
	145				150					155				160	
Thr	Asn	Cys	Leu	Gly	Pro	Leu	Ala	Lys	Val	Ile	Asn	Asp	Glu	Phe	Gly
			165					170					175		
Ile	Val	Lys	Gly	Leu	Xaa	Thr	Thr	Ile	His	Ala	Tyr	Thr	Xaa	Val	Gln
		180						185					190		
Asn	Leu	Gln	Asp	Gly	Pro	His	Lys	Asp	Leu	Arg	Arg	Ala	Arg	Ala	Ala
	195						200					205			
Ala	Leu	Asn	Ile	Val	Pro	Thr	Ser	Thr	Gly	Ala	Ala	Lys	Ala	Ile	Gly
	210					215					220				
Leu	Val	Leu	Pro	Glu	Leu	Lys	Gly	Lys	Leu	Asp	Gly	Tyr	Ala	Leu	Arg
	225				230					235				240	
Val	Pro	Ile	Pro	Thr	Gly	Ser	Val	Thr	Asp	Leu	Thr	Ala	Glu	Leu	Gly
			245					250					255		
Lys	Ser	Ala	Thr	Val	Asp	Glu	Ile	Asn	Ala	Ala	Met				

20051543.011802

260

265

<210> 187
 <211> 41
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (39)...(39)

<400> 187
 Met Asn Lys Ala Glu Leu Ile Asp Val Leu Thr Glu Lys Leu Gly Ser
 1 5 10 15
 Asp Arg Arg Gln Ala Thr Ala Ala Val Glu Asn Val Val Asp Thr Ile
 20 25 30
 Val Ala Ala Val Pro Lys Xaa Val Val
 35 40

<210> 188
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<221> unsure
 <222> (12)...(12)

<400> 188
 atgaayaarg cngarctsat ygaygt

26

<210> 189
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<400> 189
 atsgtrtgva cvacgttytc

20

<210> 190
 <211> 84
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in a lab

<221> unsure
 <222> (2)...(2)

<400> 190
 gnactcattg acgtactcac tgagaagctg ggctcggatt gtcggcaagc gactgcggca

60

208710 "E49T5007
 10051643 "011802

atggagaacg tgggtccacac cata

84

<210> 191
<211> 337
<212> DNA
<213> Mycobacterium vaccae

<220>
<221> unsure
<222> (2)...(2)

<400> 191
gnactcattg acgtactcac tgagaagctg ggctcggatt gtcggcaagc gactgcggcg 60
gtggagaatg ttgtcgacac catcgtgcgc gccgtgcaca aggggtgagag cgtcaccatc 120
acgggcttcg gtgttttcga gcagcgtcgt cgcgcagcac gcgtggcacg caatccgcgc 180
accggcgaga ccgtgaaggt caagcccacc tcagtcgccg cattccgtcc cggcgctcag 240
ttcaaggctg ttgtctcttg cgcacagaag cttccggccg aggggtccggc ggtcaagcgc 300
ggtgtgaccg cgacgagcac cgcgcgcaag gcagcca 337

<210> 192
<211> 111
<212> PRT
<213> Mycobacterium vaccae

<220>
<221> UNSURE
<222> (1)...(1)

<400> 192
Xaa Leu Ile Asp Val Leu Thr Glu Lys Leu Gly Ser Asp Arg Gln Ala
1 5 10 15
Thr Ala Ala Val Glu Asn Val Val Asp Thr Ile Val Arg Ala Val His
20 25 30
Lys Gly Glu Ser Val Thr Ile Thr Gly Phe Gly Val Phe Glu Gln Arg
35 40 45
Arg Arg Ala Ala Arg Val Ala Arg Asn Pro Arg Thr Gly Glu Thr Val
50 55 60
Lys Val Lys Pro Thr Ser Val Pro Ala Phe Arg Pro Gly Ala Gln Phe
65 70 75 80
Lys Ala Val Val Ser Gly Ala Gln Lys Leu Pro Ala Glu Gly Pro Ala
85 90 95
Val Lys Arg Gly Val Thr Ala Thr Ser Thr Ala Arg Lys Ala Ala
100 105 110

<210> 193
<211> 1164
<212> DNA
<213> Mycobacterium vaccae

<400> 193
ggtggcgcg atcgagaagc gcccgccccg gttcacgggc gcctgatcat ggtgcgggcg 60
gcgctgcgct acggcttcgg gacggcctca ctgctggccg gcgggttcgt gctgcgcgcc 120
ctgcaggga cgctgcgcg cctcggcgcg actccgggag aggtcgcgcc ggtggcgcg 180
cgctcgccga actaccgcga cggcaagttc gtcaacctgg agccccgtc gggcatcacg 240
atggatcgcg acctgcagcg gatgctgttg cgcgatctgg ccaacgcgc atcccaggcg 300
aagccgccc gaccgatccc gctggccgag ccgccgaagg gggatccac tcccgcgccg 360
gcggcgccca gctggtacgg ccattccagc gtgctgatcg aggtcgacgg ctaccgcgtg 420

2025-04-10 10:54:00

ctggccgacc cggtgtggag caacagatgt tgcacctcac gggcggtcgg accgcagcgc 480
 atgcacgacg tcccggtgcc gctggaggcg cttcccgcgg tggacgcggt ggtgatcagc 540
 cagcaccact acgaccacct cgacatcgac accatcgtcg cgttggcgca caccagcgg 600
 gccccgttcg tgggtccggt gggcatcggc gcacacctgc gcaagtgggg cgtccccgag 660
 gcgcggatcg tcgagttgga ctggcacgaa gcccaccgca tagacgacct gacgctggtc 720
 tgcacccccg cccggcactt ctccggacgg ttgttctccc gcgactcgac gctgtgggcg 780
 tcgtgggtgg tcaccggctc gtgcgacaag gcgttcttcg gtggcgacac cggatacacg 840
 aagagcttcg ccgagatcgg cgacgagtag ggtccgttcg atctgaccct gctgccgac 900
 ggggcctacc atcccgcggt cgccgacatc cacatgaacc ccgaggaggc ggtgcgcgcc 960
 catctggacc tgaccgaggt ggacaacagc ctgatgggtc ccatccactg ggcgacattc 1020
 cgctcgcgcc cgcacccgtg gtccgagccc gccgaacgcc tgctgaccgc tgccgacgcc 1080
 gagcgggtac gcctgaccgt gccgattccc ggtcagcggg tggacccgga gtcgacgttc 1140
 gacccgtggt ggcggttctg aacc 1164

<210> 194

<211> 370

<212> PRT

<213> Mycobacterium vaccae

<400> 194

Met Val Arg Ala Ala Leu Arg Tyr Gly Phe Gly Thr Ala Ser Leu Leu
 1 5 10 15
 Ala Gly Gly Phe Val Leu Arg Ala Leu Gln Gly Thr Pro Ala Ala Leu
 20 25 30
 Gly Ala Thr Pro Gly Glu Val Ala Pro Val Ala Arg Arg Ser Pro Asn
 35 40 45
 Tyr Arg Asp Gly Lys Phe Val Asn Leu Glu Pro Pro Ser Gly Ile Thr
 50 55 60
 Met Asp Arg Asp Leu Gln Arg Met Leu Leu Arg Asp Leu Ala Asn Ala
 65 70 75 80
 Ala Ser Gln Gly Lys Pro Pro Gly Pro Ile Pro Leu Ala Glu Pro Pro
 85 90 95
 Lys Gly Asp Pro Thr Pro Ala Pro Ala Ala Ser Trp Tyr Gly His
 100 105 110
 Ser Ser Val Leu Ile Glu Val Asp Gly Tyr Arg Val Leu Ala Asp Pro
 115 120 125
 Val Trp Ser Asn Arg Cys Ser Pro Ser Arg Ala Val Gly Pro Gln Arg
 130 135 140
 Met His Asp Val Pro Val Pro Leu Glu Ala Leu Pro Ala Val Asp Ala
 145 150 155 160
 Val Val Ile Ser His Asp His Tyr Asp His Leu Asp Ile Asp Thr Ile
 165 170 175
 Val Ala Leu Ala His Thr Gln Arg Ala Pro Phe Val Val Pro Leu Gly
 180 185 190
 Ile Gly Ala His Leu Arg Lys Trp Gly Val Pro Glu Ala Arg Ile Val
 195 200 205
 Glu Leu Asp Trp His Glu Ala His Arg Ile Asp Asp Leu Thr Leu Val
 210 215 220
 Cys Thr Pro Ala Arg His Phe Ser Gly Arg Leu Phe Ser Arg Asp Ser
 225 230 235 240
 Thr Leu Trp Ala Ser Trp Val Val Thr Gly Ser Ser His Lys Ala Phe
 245 250 255
 Phe Gly Gly Asp Thr Gly Tyr Thr Lys Ser Phe Ala Glu Ile Gly Asp
 260 265 270
 Glu Tyr Gly Pro Phe Asp Leu Thr Leu Leu Pro Ile Gly Ala Tyr His
 275 280 285
 Pro Ala Phe Ala Asp Ile His Met Asn Pro Glu Glu Ala Val Arg Ala

10051643.011802

290 295 300
 His Leu Asp Leu Thr Glu Val Asp Asn Ser Leu Met Val Pro Ile His
 305 310 315 320
 Trp Ala Thr Phe Arg Leu Ala Pro His Pro Trp Ser Glu Pro Ala Glu
 325 330 335
 Arg Leu Leu Thr Ala Ala Asp Ala Glu Arg Val Arg Leu Thr Val Pro
 340 345 350
 Ile Pro Gly Gln Arg Val Asp Pro Glu Ser Thr Phe Asp Pro Trp Trp
 355 360 365
 Arg Phe
 370

<210> 195
 <211> 650
 <212> DNA
 <213> Mycobacterium vaccae

<400> 195
 gacacaccag caccactgtt aacctcgcta gatcagtcgg ccgaacggaa ggacagccgt 60
 gaccctgaaa accctagtca ccagcatgac cgctggggca gcagcagccg caacactcgg 120
 cgctgccgcc gtgggtgtga cctcgattgc cgctgggtgc ggtgtcgccg gcgcgtcgcc 180
 cgcggtgctg aacgcaccgc tgccttccgc ccctgcccc gatctgcagg gaccgctggg 240
 ctccaccttg agcgcgctgt cgggcccggg ctcccttcgcc ggcgccaagg ccacctacgt 300
 ccagggcggt ctcgggccgca tcgaggcccc ggtggccgac agcggataca gcaacgccgc 360
 ggccaagggc tacttcccgc tgagcttcac cgctgcgggc atcgaccaga acggtccgat 420
 cgtgaccgcc aacgtcaccg cggcgggccc gacggggcgc gtggccaccc agccgctgac 480
 gttcatcgcc gggccgagcc cgaccggatg gcagctgtcc aagcagtcgg cactggccct 540
 gatgtccgcg gtgggtgatc tcccgcacga ttctgggtcc cagcgccgct acatgtgtgg 600
 cggcgctcgg gctgggtggg tgcctgggcg gctgcgcgca agatgaacat 650

<210> 196
 <211> 159
 <212> PRT
 <213> Mycobacterium vaccae

<400> 196
 Met Thr Ala Gly Ala Ala Ala Ala Thr Leu Gly Ala Ala Ala Val
 1 5 10 15
 Gly Val Thr Ser Ile Ala Val Gly Ala Gly Val Ala Gly Ala Ser Pro
 20 25 30
 Ala Val Leu Asn Ala Pro Leu Leu Ser Ala Pro Ala Pro Asp Leu Gln
 35 40 45
 Gly Pro Leu Val Ser Thr Leu Ser Ala Leu Ser Gly Pro Gly Ser Phe
 50 55 60
 Ala Gly Ala Lys Ala Thr Tyr Val Gln Gly Gly Leu Gly Arg Ile Glu
 65 70 75 80
 Ala Arg Val Ala Asp Ser Gly Tyr Ser Asn Ala Ala Ala Lys Gly Tyr
 85 90 95
 Phe Pro Leu Ser Phe Thr Val Ala Gly Ile Asp Gln Asn Gly Pro Ile
 100 105 110
 Val Thr Ala Asn Val Thr Ala Ala Pro Thr Gly Ala Val Ala Thr
 115 120 125
 Gln Pro Leu Thr Phe Ile Ala Gly Pro Ser Pro Thr Gly Trp Gln Leu
 130 135 140
 Ser Lys Gln Ser Ala Leu Ala Leu Met Ser Ala Val Ile Ala Ala
 145 150 155

<210> 197
 <211> 285
 <212> PRT
 <213> Mycobacterium vaccae

<400> 197

Met	Gln	Val	Arg	Arg	Val	Leu	Gly	Ser	Val	Gly	Ala	Ala	Val	Ala	Val
1				5				10					15		
Ser	Ala	Ala	Leu	Trp	Gln	Thr	Gly	Val	Ser	Ile	Pro	Thr	Ala	Ser	Ala
			20					25				30			
Asp	Pro	Cys	Pro	Asp	Ile	Glu	Val	Ile	Phe	Ala	Arg	Gly	Thr	Gly	Ala
		35					40					45			
Glu	Pro	Gly	Leu	Gly	Trp	Val	Gly	Asp	Ala	Phe	Val	Asn	Ala	Leu	Arg
	50					55					60				
Pro	Lys	Val	Gly	Glu	Gln	Ser	Val	Gly	Thr	Tyr	Ala	Val	Asn	Tyr	Pro
65					70					75				80	
Ala	Gly	Phe	Asp	Phe	Asp	Lys	Ser	Ala	Pro	Met	Gly	Ala	Ala	Asp	Ala
				85					90					95	
Ser	Gly	Arg	Val	Gln	Trp	Met	Ala	Asp	Asn	Cys	Pro	Asp	Thr	Lys	Leu
			100					105					110		
Val	Leu	Gly	Gly	Met	Ser	Gln	Gly	Ala	Gly	Val	Ile	Asp	Leu	Ile	Thr
	115						120					125			
Val	Asp	Pro	Arg	Pro	Leu	Gly	Arg	Phe	Thr	Pro	Thr	Pro	Met	Pro	Pro
	130					135					140				
Arg	Val	Ala	Asp	His	Val	Ala	Ala	Val	Val	Val	Phe	Gly	Asn	Pro	Leu
145					150					155				160	
Arg	Asp	Ile	Arg	Gly	Gly	Gly	Pro	Leu	Pro	Gln	Met	Ser	Gly	Thr	Tyr
				165					170				175		
Gly	Pro	Lys	Ser	Ile	Asp	Leu	Cys	Ala	Leu	Asp	Asp	Pro	Phe	Cys	Ser
			180					185					190		
Pro	Gly	Phe	Asn	Leu	Pro	Ala	His	Phe	Ala	Tyr	Ala	Asp	Asn	Gly	Met
	195					200						205			
Val	Glu	Glu	Ala	Ala	Asn	Phe	Ala	Arg	Leu	Glu	Pro	Gly	Gln	Ser	Val
	210					215					220				
Glu	Leu	Pro	Glu	Ala	Pro	Tyr	Leu	His	Leu	Phe	Val	Pro	Arg	Gly	Glu
225					230					235				240	
Val	Thr	Leu	Glu	Asp	Ala	Gly	Pro	Leu	Arg	Glu	Gly	Asp	Ala	Val	Arg
				245					250				255		
Phe	Thr	Ala	Ser	Gly	Gly	Gln	Arg	Val	Thr	Ala	Thr	Ala	Pro	Ala	Glu
			260				265					270			
Ile	Leu	Val	Trp	Glu	Met	His	Ala	Gly	Leu	Gly	Ala	Ala			
	275						280					285			

<210> 198
 <211> 743
 <212> DNA
 <213> Mycobacterium vaccae

<400> 198

ggatccgcgcg	caccggctgg	tgacgaccaa	gtacaacccg	gcccgcacct	ggacggccga	60
gaactccgctc	ggcatcggcg	gcgcgtacct	gtgcatctac	gggatggagg	gccccggcgcg	120
ctatcaggttc	gtcggccgca	ccacccaggt	gtggagtcgt	taccgccaca	cggcgcggtt	180
cgaaccgga	agtccttggc	tgtgcgggtt	tttcgaccga	atttcgtggt	atccggtgtc	240
ggccgaggag	ctgctggaat	tgcgagccga	catggccgca	ggccggggct	cggtcgacat	300
caccgacggc	gtgttctccc	tgcgagacga	cgaacggttc	ctggccgaca	acgccgacga	360
catcgccgcg	ttccgttccc	ggcaggcggc	cgcgttctcc	gccgagcgga	ccgcgtgggc	420
ggccgccggc	gagttcgacc	gcgccgagaa	agccgcgtcg	aaggccaccg	acgccgatac	480

cggggacctg	gtgctctacg	acggtgacga	gcggggtcgac	gctccgttcg	cgtcgagcgt	540
gtggaaggtc	gacgtcgccg	tcggtgaccg	ggtgggtggc	ggacagccgt	tgctggcgct	600
ggaggcgatg	aagatggaga	ccgtgctgcg	cgccccggcc	gacgggggtg	tcacccagat	660
cctgggtctc	gctgggcatc	tcgtcgatcc	cggcacccca	ctggtcgtgg	tcggcaccgg	720
agtgcgcgca	tgagcgccgt	cga				743

<210> 199
 <211> 243
 <212> PRT
 <213> Mycobacterium vaccae

<400> 199

Asp	Pro	Arg	His	Arg	Leu	Val	Thr	Thr	Lys	Tyr	Asn	Pro	Ala	Arg	Thr
1				5					10					15	
Trp	Thr	Ala	Glu	Asn	Ser	Val	Gly	Ile	Gly	Gly	Ala	Tyr	Leu	Cys	Ile
			20					25					30		
Tyr	Gly	Met	Glu	Gly	Pro	Gly	Gly	Tyr	Gln	Phe	Val	Gly	Arg	Thr	Thr
		35					40					45			
Gln	Val	Trp	Ser	Arg	Tyr	Arg	His	Thr	Ala	Pro	Phe	Glu	Pro	Gly	Ser
		50				55					60				
Pro	Trp	Leu	Leu	Arg	Phe	Phe	Asp	Arg	Ile	Ser	Trp	Tyr	Pro	Val	Ser
65				70					75					80	
Ala	Glu	Glu	Leu	Leu	Glu	Leu	Arg	Ala	Asp	Met	Ala	Ala	Gly	Arg	Gly
			85						90				95		
Ser	Val	Asp	Ile	Thr	Asp	Gly	Val	Phe	Ser	Leu	Ala	Glu	His	Glu	Arg
			100					105					110		
Phe	Leu	Ala	Asp	Asn	Ala	Asp	Asp	Ile	Ala	Ala	Phe	Arg	Ser	Arg	Gln
		115					120					125			
Ala	Ala	Ala	Phe	Ser	Ala	Glu	Arg	Thr	Ala	Trp	Ala	Ala	Ala	Gly	Glu
		130				135					140				
Phe	Asp	Arg	Ala	Glu	Lys	Ala	Ala	Ser	Lys	Ala	Thr	Asp	Ala	Asp	Thr
145					150				155					160	
Gly	Asp	Leu	Val	Leu	Tyr	Asp	Gly	Asp	Glu	Arg	Val	Asp	Ala	Pro	Phe
			165					170						175	
Ala	Ser	Ser	Val	Trp	Lys	Val	Asp	Val	Ala	Val	Gly	Asp	Arg	Val	Val
			180					185					190		
Ala	Gly	Gln	Pro	Leu	Leu	Ala	Leu	Glu	Ala	Met	Lys	Met	Glu	Thr	Val
		195					200					205			
Leu	Arg	Ala	Pro	Ala	Asp	Gly	Val	Val	Thr	Gln	Ile	Leu	Val	Ser	Ala
		210				215					220				
Gly	His	Leu	Val	Asp	Pro	Gly	Thr	Pro	Leu	Val	Val	Val	Gly	Thr	Gly
225					230				235					240	
Val	Arg	Ala													

<210> 200
 <211> 858
 <212> DNA
 <213> Mycobacterium vaccae

<400> 200

gaaatcccg	gtctgaaacc	ctcttttcgc	ggcgcccctc	aggacggtaa	gggggccaag	60
cggattgaaa	aatgttcgct	gaatgagcct	gaaattgcgc	gtggctcttg	gaaatcagca	120
cgatggggtt	taccgtgtcc	actagtcggt	ccaaagagga	ccactgggtt	tcggagggtt	180
tgcatgaaca	aagcagagct	catcgacgta	ctcactgaga	agctgggctc	ggatcgtcgg	240
caagcgactg	cggcggttga	gaacgttgtc	gacaccatcg	tgcgcgccgt	gcacaagggt	300
gagagcgta	ccatcacggg	cttcggtgtt	ttcgagcagc	gtcgtcgcgc	agcacgcgtg	360
gcacgcaatc	cgcgcaccgg	cgagaccgtg	aaggtcaagc	ccacctcagt	cccggcattc	420

10051613.01.1802

cgtccccggcg	ctcagttcaa	ggctgttgtc	tctggcgcac	agaagcttcc	ggccgagggt	480
ccggcggtca	agcgcggtgt	gaccgcgacg	agcaccgccc	gcaaggcagc	caagaaggct	540
ccggccaaga	aggctgccgc	gaagaaggcc	gcgccggcca	agaaggctcc	ggcgaagaag	600
gctgcgacca	aggctgcacc	ggccaagaag	gccactgccg	ccaagaaggc	cgcgccggcc	660
aagaaggcca	ctgccgcca	gaaggctgca	ccggccaaga	aggctccggc	caagaaggct	720
gcgaccaagg	ctgcaccggc	caagaaggct	ccggccaaga	aggccgcgac	caaggctgca	780
ccggccaaga	aggctccggc	cgccaagaag	gcgcccgcga	agaaggctcc	ggccaagcgc	840
ggcgacgcga	agtaagtc					858

<210> 201
 <211> 223
 <212> PRT
 <213> Mycobacterium vaccae

<400> 201

Met	Asn	Lys	Ala	Glu	Leu	Ile	Asp	Val	Leu	Thr	Glu	Lys	Leu	Gly	Ser
1				5					10					15	
Asp	Arg	Arg	Gln	Ala	Thr	Ala	Ala	Val	Glu	Asn	Val	Val	Asp	Thr	Ile
			20					25					30		
Val	Arg	Ala	Val	His	Lys	Gly	Glu	Ser	Val	Thr	Ile	Thr	Gly	Phe	Gly
		35				40						45			
Val	Phe	Glu	Gln	Arg	Arg	Arg	Ala	Ala	Arg	Val	Ala	Arg	Asn	Pro	Arg
	50				55				60						
Thr	Gly	Glu	Thr	Val	Lys	Val	Lys	Pro	Thr	Ser	Val	Pro	Ala	Phe	Arg
65					70				75					80	
Pro	Gly	Ala	Gln	Phe	Lys	Ala	Val	Val	Ser	Gly	Ala	Gln	Lys	Leu	Pro
			85					90						95	
Ala	Glu	Gly	Pro	Ala	Val	Lys	Arg	Gly	Val	Thr	Ala	Thr	Ser	Thr	Ala
		100						105					110		
Arg	Lys	Ala	Ala	Lys	Lys	Ala	Pro	Ala	Lys	Lys	Ala	Ala	Ala	Lys	Lys
	115						120						125		
Ala	Ala	Pro	Ala	Lys	Lys	Ala	Pro	Ala	Lys	Lys	Ala	Ala	Thr	Lys	Ala
	130					135					140				
Ala	Pro	Ala	Lys	Lys	Ala	Thr	Ala	Ala	Lys	Lys	Ala	Ala	Pro	Ala	Lys
145					150				155					160	
Lys	Ala	Thr	Ala	Ala	Lys	Lys	Ala	Ala	Pro	Ala	Lys	Lys	Ala	Pro	Ala
			165					170						175	
Lys	Lys	Ala	Ala	Thr	Lys	Ala	Ala	Pro	Ala	Lys	Lys	Ala	Pro	Ala	Lys
		180						185					190		
Lys	Ala	Ala	Thr	Lys	Ala	Ala	Pro	Ala	Lys	Lys	Ala	Pro	Ala	Ala	Lys
	195						200					205			
Lys	Ala	Pro	Ala	Lys	Lys	Ala	Pro	Ala	Lys	Arg	Gly	Gly	Arg	Lys	
	210					215					220				

<210> 202
 <211> 570
 <212> DNA
 <213> Mycobacterium vaccae

<400> 202

agacagacag	tgatcgacga	aaccctcttc	catgccgagg	agaagatgga	gaaggccgtc	60
tcggtggcac	ccgacgacct	ggcgctcgatt	cgtaccggcc	gcgcgaaccc	cggcatgttc	120
aaccggatca	acatcgacta	ctacggcgcc	tcacccccga	tcacgcagct	gtccagcatc	180
aacgtgcccc	aggcgcgcat	ggtggtgac	aagccctacg	aggcgagcca	gctgcgcctc	240
atcgaggatg	cgatccgcaa	ctccgacctc	ggcgtaaatc	cgaccaacga	cggcaacatc	300
atccgggtgt	cgatcccgca	gtccaccgag	gagcgccgcc	gcgacctggt	caagcaggcc	360
aaggccaagg	gcgaggacgc	caagggtgtc	gtgcgcaaca	tccgtcgcaa	ggcgatggag	420

gaactctccc	ggatcaagaa	ggacggcgac	gccggcgaag	accaagtgc	ccgcgccgag	480
aaggatctcg	acaagagcac	ccaccagtac	acgaatcaga	tcgacgaact	ggc'aagcac	540
aaggaaggcg	agttgctgga	ggctctgacca				570

<210> 203
 <211> 187
 <212> PRT
 <213> Mycobacterium vaccae

<220>
 <221> UNSURE
 <222> (186)...(186)

<400> 203

Val	Ile	Asp	Glu	Thr	Leu	Phe	His	Ala	Glu	Glu	Lys	Met	Glu	Lys	Ala
1				5					10					15	
Val	Ser	Val	Ala	Pro	Asp	Asp	Leu	Ala	Ser	Ile	Arg	Thr	Gly	Arg	Ala
			20					25					30		
Asn	Pro	Gly	Met	Phe	Asn	Arg	Ile	Asn	Ile	Asp	Tyr	Tyr	Gly	Ala	Ser
		35					40					45			
Thr	Pro	Ile	Thr	Gln	Leu	Ser	Ser	Ile	Asn	Val	Pro	Glu	Ala	Arg	Met
		50				55					60				
Val	Val	Ile	Lys	Pro	Tyr	Glu	Ala	Ser	Gln	Leu	Arg	Leu	Ile	Glu	Asp
65					70					75				80	
Ala	Ile	Arg	Asn	Ser	Asp	Leu	Gly	Val	Asn	Pro	Thr	Asn	Asp	Gly	Asn
			85						90					95	
Ile	Ile	Arg	Val	Ser	Ile	Pro	Gln	Leu	Thr	Glu	Glu	Arg	Arg	Arg	Asp
			100					105					110		
Leu	Val	Lys	Gln	Ala	Lys	Ala	Lys	Gly	Glu	Asp	Ala	Lys	Val	Ser	Val
		115				120						125			
Arg	Asn	Ile	Arg	Arg	Lys	Ala	Met	Glu	Glu	Leu	Ser	Arg	Ile	Lys	Lys
	130					135					140				
Asp	Gly	Asp	Ala	Gly	Glu	Asp	Glu	Val	Thr	Arg	Ala	Glu	Lys	Asp	Leu
145				150						155				160	
Asp	Lys	Ser	Thr	His	Gln	Tyr	Thr	Asn	Gln	Ile	Asp	Glu	Leu	Val	Lys
			165					170						175	
His	Lys	Glu	Gly	Glu	Leu	Leu	Glu	Val	Xaa	Pro					
			180					185							

<210> 204
 <211> 1364
 <212> DNA
 <213> Mycobacterium vaccae

<400> 204

cgacctccac	ccggggcgtga	ggccaaccac	taggctggtc	accagtagtc	gacggcacac	60
ttcaccgaaa	aaatgaggac	agaggagaca	cccgtgacga	tccgtgttgg	tgtgaacggc	120
ttcggccgta	tcggacgcaa	cttcttccgc	gcgctggacg	cgcagaaggc	cgaaggcaag	180
aacaaggaca	tcgagatcgt	cgcggtcaac	gacctcaccg	acaacgccac	gctggcgcac	240
ctgctgaagt	tcgactcgat	cctggggccgg	ctgccctacg	acgtgagcct	cgaaggcgag	300
gacaccatcg	tcgtcggcag	caccaagatc	aaggcgctcg	aggtcaagga	aggcccggcg	360
gcgctgccct	ggggcgacct	gggcgtcgac	gtcgtcgctg	agtccaccgg	catcttcacc	420
aagcgcgaca	aggcccaggg	ccacctcgac	gcgggcgcca	agaagggtcat	catctccgcy	480
ccggccaccg	atgaggagcat	caccatcgty	ctcggcgctca	acgacgacaa	gtacgacggc	540
agccagaaca	tcatctccaa	cgcgtcgtyc	accacgaact	gcctcggccc	gctggcggaag	600
gtcatcaacg	acgagttcgg	catcgctcaag	ggcctgatga	ccaccatcca	cgcctacacc	660
caggtccaga	acctgcagga	cggcccgcac	aaggatctgc	gccggggccc	cgcggccgcy	720

ctgaacatcg	tgccgacctc	caccggtgcc	gccaaaggcca	tccgactggt	gctgcccag	780
ctgaagggca	agctcgacgg	ctacgcgctg	cgggtgccga	tccccaccgg	ctcggtcacc	840
gacctgaccg	ccgagctggg	caagtcggcc	accgtggacg	agatcaacgc	cgcgatgaag	900
gctgcggccg	agggcccgt	caagggcatc	ctcaagtact	acgacgcccc	gatcgtgtcc	960
agcgacatcg	tcaccgatcc	gcacagctcg	atcttcgact	cgggtctgac	caaggatc	1020
gacaaccagg	ccaaggctcg	gtcctggtac	gacaacgagt	ggggctactc	caaccgcctc	1080
gtcgacctgg	tgcgcctggg	cggcaagtcg	ctgtaggggc	gagcgaagcg	acgggagaac	1140
agaggcgcca	tggcgatcaa	gtcactcgac	gaccttctgt	ccgaaggggt	gacggggcgg	1200
ggcgactactg	tgcgctccga	cctgaacgtc	cccctcgacg	gcgacacgat	caccgacccg	1260
ggcgcatca	tgcctcggt	gccgacgttg	aaggcggtga	gtgacgccgg	cgccaagggtg	1320
gtcgtcaccg	cgcgtctggg	caggcccaag	ggtgagccgg	atcc		1364

<210> 205

<211> 340

<212> PRT

<213> Mycobacterium vaccae

<400> 205

Val	Thr	Ile	Arg	Val	Gly	Val	Asn	Gly	Phe	Gly	Arg	Ile	Gly	Arg	Asn
1				5					10					15	
Phe	Phe	Arg	Ala	Leu	Asp	Ala	Gln	Lys	Ala	Glu	Gly	Lys	Asn	Lys	Asp
			20					25					30		
Ile	Glu	Ile	Val	Ala	Val	Asn	Asp	Leu	Thr	Asp	Asn	Ala	Thr	Leu	Ala
			35					40					45		
His	Leu	Leu	Lys	Phe	Asp	Ser	Ile	Leu	Gly	Arg	Leu	Pro	Tyr	Asp	Val
			50					55					60		
Ser	Leu	Glu	Gly	Glu	Asp	Thr	Ile	Val	Val	Gly	Ser	Thr	Lys	Ile	Lys
65								70					75		80
Ala	Leu	Glu	Val	Lys	Glu	Gly	Pro	Ala	Ala	Leu	Pro	Trp	Gly	Asp	Leu
				85					90					95	
Gly	Val	Asp	Val	Val	Val	Glu	Ser	Thr	Gly	Ile	Phe	Thr	Lys	Arg	Asp
			100					105					110		
Lys	Ala	Gln	Gly	His	Leu	Asp	Ala	Gly	Ala	Lys	Lys	Val	Ile	Ile	Ser
			115					120					125		
Ala	Pro	Ala	Thr	Asp	Glu	Asp	Ile	Thr	Ile	Val	Leu	Gly	Val	Asn	Asp
			130					135					140		
Asp	Lys	Tyr	Asp	Gly	Ser	Gln	Asn	Ile	Ile	Ser	Asn	Ala	Ser	Cys	Thr
145								150					155		160
Thr	Asn	Cys	Leu	Gly	Pro	Leu	Ala	Lys	Val	Ile	Asn	Asp	Glu	Phe	Gly
				165					170					175	
Ile	Val	Lys	Gly	Leu	Met	Thr	Thr	Ile	His	Ala	Tyr	Thr	Gln	Val	Gln
			180					185					190		
Asn	Leu	Gln	Asp	Gly	Pro	His	Lys	Asp	Leu	Arg	Arg	Ala	Arg	Ala	Ala
			195					200					205		
Ala	Leu	Asn	Ile	Val	Pro	Thr	Ser	Thr	Gly	Ala	Ala	Lys	Ala	Ile	Gly
			210					215					220		
Leu	Val	Leu	Pro	Glu	Leu	Lys	Gly	Lys	Leu	Asp	Gly	Tyr	Ala	Leu	Arg
225								230					235		240
Val	Pro	Ile	Pro	Thr	Gly	Ser	Val	Thr	Asp	Leu	Thr	Ala	Glu	Leu	Gly
				245					250					255	
Lys	Ser	Ala	Thr	Val	Asp	Glu	Ile	Asn	Ala	Ala	Met	Lys	Ala	Ala	Ala
			260					265					270		
Glu	Gly	Pro	Leu	Lys	Gly	Ile	Leu	Lys	Tyr	Tyr	Asp	Ala	Pro	Ile	Val
			275					280					285		
Ser	Ser	Asp	Ile	Val	Thr	Asp	Pro	His	Ser	Ser	Ile	Phe	Asp	Ser	Gly
			290					295					300		
Leu	Thr	Lys	Val	Ile	Asp	Asn	Gln	Ala	Lys	Val	Val	Ser	Trp	Tyr	Asp

305 310 315 320
 Asn Glu Trp Gly Tyr Ser Asn Arg Leu Val Asp Leu Val Ala Leu Val
 325 330 335
 Gly Lys Ser Leu
 340

<210> 206
 <211> 522
 <212> DNA
 <213> Mycobacterium vaccae

<400> 206
 acctacgagt tcgagaacaa gggtcacgggc ggccgcatcc cgcgcgagta catcccgtcg 60
 gtggatgccg gcgcgcagga cgccatgcag tacggcgtgc tggccggcta cccgctgggt 120
 aacgtcaagc tgacgctgct cgacgggtgcc taccacgaag tcgactcgtc ggaaatggca 180
 ttcaagggtg ccggctccca gggtcatgaag aaggctgccg cccaggcgca gccggtgatc 240
 ctggagccag tgatggcggt cgaggtcacg acgcccagg attacatggg tgaagtgagc 300
 ggcgacctga actcccgcgc tggtcagatc caggccatgg aggagcggag cgggtgctcgt 360
 gtcgtgaagg cgcaggttcc gctgtcggag atgttcggct acgtcggaga ccttcggtcg 420
 aagaccaggg gccgggccaa ctactccatg gtgttcgact cgtacgccga agttccggcg 480
 aacgtgtcga aggagatcat cgccaaggcg acgggccagt aa 522

<210> 207
 <211> 173
 <212> PRT
 <213> Mycobacterium vaccae

<400> 207
 Thr Tyr Glu Phe Glu Asn Lys Val Thr Gly Gly Arg Ile Pro Arg Glu
 1 5 10 15
 Tyr Ile Pro Ser Val Asp Ala Gly Ala Gln Asp Ala Met Gln Tyr Gly
 20 25 30
 Val Leu Ala Gly Tyr Pro Leu Val Asn Val Lys Leu Thr Leu Leu Asp
 35 40 45
 Gly Ala Tyr His Glu Val Asp Ser Ser Glu Met Ala Phe Lys Val Ala
 50 55 60
 Gly Ser Gln Val Met Lys Lys Ala Ala Ala Gln Ala Gln Pro Val Ile
 65 70 75 80
 Leu Glu Pro Val Met Ala Val Glu Val Thr Thr Pro Glu Asp Tyr Met
 85 90 95
 Gly Glu Val Ile Gly Asp Leu Asn Ser Arg Arg Gly Gln Ile Gln Ala
 100 105 110
 Met Glu Glu Arg Ser Gly Ala Arg Val Val Lys Ala Gln Val Pro Leu
 115 120 125
 Ser Glu Met Phe Gly Tyr Val Gly Asp Leu Arg Ser Lys Thr Gln Gly
 130 135 140
 Arg Ala Asn Tyr Ser Met Val Phe Asp Ser Tyr Ala Glu Val Pro Ala
 145 150 155 160
 Asn Val Ser Lys Glu Ile Ile Ala Lys Ala Thr Gly Gln
 165 170

<210> 208
 <211> 12
 <212> PRT
 <213> Mycobacterium vaccae

<400> 208

20816145001

Ala Leu Pro Gln Leu Thr Asp Glu Gln Arg Ala Ala
1 5 10

10051643-041802